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RAPIDLY OCCURRING HEMIPLEGIA IN ACUTE LEAD-POISONING.[1]

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On November 10, 1896, I was asked by Dr. Theodore Gruel to see a case of paralysis of rapid onset and obscure origin. I found the patient to be a lady, thirty-five years of age, a brunette of fine physique, unable to walk, and scarcely able to stand without assistance. She had been still more helpless, but lately had been improving. Her previous history was one of almost uninterrupted health, the only illness being an attack of pneumonia four years ago, followed by albuminuria, from which she recovered on going to a southern climate. She never complained of anything, but, on questioning as regards susceptibilities, spoke of being susceptible to poison-vine. She spent the summer at the seashore, and came back to her home in the best of health. Shortly after her return it was determined to paint some rooms in the house, though not the one in which she slept, and the house throughout became filled with the odor of fresh paint. She began, almost from the first day, to complain of headache, and three days after the painters had been at work the headache had become so violent and she felt so ill that she sent for her family physician, Dr. Gruel. He found her much worse than had been supposed. Her speech was thick; the tongue was slowly protruded and deviated to the right; there had been vomiting. The right arm and leg were much impaired in their motion, the leg more so than the arm, and this loss of power was preceded by a feeling of numbness. The right side soon became still more helpless, and the patient was forced to remain in bed. Shortly after the right side was affected, numbness and a sense of coldness on the left side were complained of; but there was never any motor weakness on that side. The sense of coldness and numbness on the left side yielded in about one week to alcohol-sponging and to frictions with a Turkish towel, and her general

[1] Read before the College of Physicians of Philadelphia, January 6, 1897.

condition became decidedly better under repeated free purgation with sulphate of magnesia and under strychnine. In the progress of the case before I saw her it was observed that, while the paralysis of the right arm improved, things dropped out of her right hand; that the eyesight was very dim and its impairment much complained of; that there were no pains in the arms or legs, or joints, or in the abdomen; that the urine, examined from the start, was of high specific gravity, 1025 to 1040, but free from albumin and sugar; that the temperature was normal; and that there were no psychical disturbances, to which, indeed, neither she nor any of her family had ever been liable. The mother, it was ascertained, had a very great susceptibility to poisons of all kinds.

When I visited Mrs. O. with Dr. Gruel for the first time, four weeks after the paralytic attack, I found a well-nourished woman sitting in a chair, but still hemiplegic. The right arm could be feebly moved, but the grasp of the hand was very weak; the right leg was powerless. There was neither wrist-drop nor foot-drop, nor tremor, nor muscular atrophy. No facial paralysis existed, and the tongue was protruded straight. The knee-jerks were exaggerated, that on the right side markedly so. There was also an increased reflex in the forearm, both on tapping the flexors and the extensors. In the course of the musculospiral, the radial, and the nerves in the legs no spots of tenderness were detected. There was no anæsthesia to touch or to pain. Tactile sensation in the fingers of both hands was well preserved, and heat was readily distinguished from cold. The muscular sense was not tested, nor were the electric reactions, though I learned subsequently from Dr. Gruel that the muscles on both sides responded well to faradization, and that the electric sensibility was normal. There was no disease of the heart. The breath had a peculiar, mawkish odor, and, in a strong light, we found an undoubted bluish line on the gums, especially around the lower incisors on the left side.

Convinced that she was suffering from lead-paralysis, we placed her on iodide of potassium. The strychnine was stopped, the sulphate of magnesia continued as a laxative, and, after about a week of this treatment, the urine was sent by Dr. Gruel to Professor Fetterolf, of the University, for examination. The report returned says, "No albumin, but lead present."

On December 24th I saw Mrs. O. again, and learned from Dr. Gruel that her progress had been uninterrupted. There had been no return of headache; indeed, the headache had passed away a few days after the seizure. The grasp of the right hand was greatly improved, though it was still not so strong as that of the left. She could now play on the piano; not, however, as well with the right hand as with the left. The sensation to touch was good in both hands; the tactile sense, tested with sharp points, seemed perfect, and was as good in the right hand as in the left; there was no diminished temperature-sense in either hand. No disorder of sensation in the legs was discernible; the motion of the right leg was not quite restored; she still dragged it a little, but she walked unassisted, even with her eyes closed. The knee-jerks were good; they did not seem any longer exaggerated. A faint bluish discoloration was still noticeable on the gum of the lower jaw. The heart-sounds were distinct; the digestion was excellent; the eyesight was fully restored; indeed, her recovery was almost complete. She had been

taking 30 to 45 grains of iodide of potassium daily since our first visit together. This we directed to be decreased and soon discontinued, and strychnine to be substituted. Systematic massage and faradization of the affected muscles were to be employed.

I am induced to put this case on record by its extreme rarity. As a rule, the publishing of isolated instances of disease is of little value; but here is one in which a woman in robust health is in three days so completely poisoned by lead that she becomes paralyzed. The form, too, of the paralysis is most unusual and its onset remarkable.

Let us first take notice of the rapidity of the poisoning. Almost from the first there is headache; after three days' exposure, paralysis, preceded by some disorder of sensation, but without colic or other abdominal symptoms except vomiting and moderate constipation. Three days is a very short time for any sign of lead-poisoning to manifest itself in, even the ordinary one of colic. Yet here we have the nervous system at once affected without preceding colic or any of the usual general symptoms of lead-poisoning. As regards the nervous system being disordered without colic first happening, the case, although unusual, is far from standing alone. In 102 cases analyzed by Tanquerel des Planches in his classical work, fourteen had not antecedent colic. It is true that the paralysis he means is for the most part the usual one of the extensors of the arms. Trousseau mentions an instance of lead-paralysis in which there was no prior colic. In three of Tanquerel's[1] cases colic followed the paralysis. But in the rapidity with which the nervous system became involved, the case I have detailed is, I believe, without precedent; at least I am not able to find one. The most rapid cases I have any cognizance of are three alluded to by Tanquerel, in which, eight days after exposure to lead, paralysis followed; here, too, the context points to the ordinary local lead-palsy. In critically examining cases of rapid development we must not overlook the fact that a person may absorb lead slowly into the system for a long time, as through impregnated drinking-water or hair-dyes, and then another and different exposure, to fresh paint, for instance, produce sudden and overwhelming manifestations. This happened in the cases reported by Chapin,[2] in which acute symptoms of lead-poisoning showed themselves in the children of a painter after being only eight days in a freshly painted room, they having been, however, during two years exposed to a pot of white-lead kept in an adjoining room. In the case of Mrs. O. there was no history whatever of previous exposure, and, as already stated, she, with the rest of the family, returned from the seashore in perfect health.

The form of paralysis in the case under discussion requires special notice. It was that rarest of all as the result of lead—hemiplegia.

[1] Traite des Maladies de Plomb, t. ii. p. 19.

[2] New York Medical Record, 1884.

Moreover, it was not attended, at least not when it came under my observation, with anæsthesia, though the hemiplegic form is generally associated with hemianæsthesia. Cases of hemiplegia from lead are spoken of by some of the older authors, as by Stoll and Andral; Tanquerel[1] mentions having met with one. Raymond[2] describes a case in a man thirty-six years of age. The extensor muscles were first affected, and the palsy was preceded by violent colic. With the hemiplegia there was anæsthesia. Oliver[3] refers to an instance of right hemiplegia with aphasia. Often what is described as hemiplegia from lead is not a true hemiplegia, but is a general paralysis of incomplete character, especially in the legs, in which the loss of power has almost entirely or entirely passed off on one side at the time the patient is first seen. In the hemiplegia, as well as in the paraplegia, from lead the muscles of the upper extremities are generally more affected than those of the lower. Jaccoud[4] tells us that this is the case in all lead-palsies in the proportion of 5 or 6 to 1. In children, however, as the observations of Putnam,[5] Sinkler,[6] and Newmark[7] prove, the palsy is more apt to be in the lower extremities. In this respect the instance of paralysis narrated in this paper is more like the lead-palsy of childhood than of adults.

From an analysis of the features of this case, and of the few that I am able to find recorded in medical literature, the clinical picture of saturnine hemiplegia of acute form is that of a hemiplegia suddenly, or rather suddenly, developed, prodromes of headache and weakness of extensor muscles in arm and leg having existed or not. The hemiplegia deepens after its onset; there is with it anæsthesia or some other disorder of sensation on one or on both sides. But this is capricious and apt to pass off before the impaired motion does. The hemiplegia is associated with excessive reflexes. This combination of symptoms is in itself significant, and is valuable, irrespective of the history of the case and the ordinary manifestations of the presence of lead in the system.

From these hemiplegias of acute or subacute origin we must separate those that come on where the system has been long impregnated with lead, and secondary changes in bloodvessels, heart, kidneys, or brain have been slowly wrought. A hardened vessel gives way, and cerebral hemorrhage with one-sided paralysis occurs. Instances of the kind are mentioned by Mathieu and Malibran,[8] and by Létienne.[9] Landowzy[10] details an autopsy in a printer who had right-sided hemiplegia and had frequently suffered from lead-colic. Besides the evidence of an old clot

[1] Op. cit.
[2] Gazette de Paris, No. 30, 1876.
[3] Med.-Chir. Trans., vol. lxxiii. 1890.
[4] Pathologie Interne.
[5] Article Lead-poisoning in Cyclopædia of Diseases of Children, and Boston Medical and Surgical Journal, February, 1893.
[6] Medical News, July 28, 1894.
[7] Ibid., May 11, 1895.
[8] Progrès Médicale, October, 1884.
[9] Arch. gén. de Méd., vol. i. 1892.
[10] Bullet. Soc. Anat., 1877.

in the brain, a descending medullary sclerosis was found. In Monakow's[1] case, a printer, who had had chronic lead-poisoning for thirty-five years, a right-sided hemiplegia due to cerebral hemorrhage happened some months before death, and atrophic and sclerotic lesions existed in the upper part of the spinal cord. In Rosenthal's case[2] of right-sided hemiplegia in a house-painter an extravasation of blood on the left side of the brain, with rigidity of the arteries at the base, was observed at the autopsy. In the remarkable group of saturnine encephalopathies described by Berger,[3] to which Dr. Stewart called my attention, occurring in a family of potters, with an evident predisposition to nervous diseases and apoplectic seizures, there were four who, while suffering from chronic lead-poisoning, had hemiplegic attacks due, with one probable exception, to cerebral hemorrhage.

There is little difficulty in distinguishing the hemiplegias due to lead from other palsies produced by lead. Most cases of paralysis from lead-poisoning, with or without the familiar wrist-drop, are owing to a degenerative neuritis, and the bilateral character of the palsy in the arms, its gradual spread, should it become general, the wasting of the muscles, the localized pains, the impairment or loss of faradic irritability, are very significant. The knee-jerks and plantar reflexes are usually much weakened or lost in extensive neuritis due to lead; yet too much stress cannot be laid on this point as a mark of distinction, for, as Hale White's[4] case proves, they may be very active. With reference to the hemiplegias that occur in chronic lead-poisoning yet are not, strictly speaking, saturnine, but due to cerebral hemorrhage, they may be discriminated by the history of long-continued lead-poisoning; by the signs of diseased arteries, heart, or kidneys; and by the sudden and complete loss of motion in the apoplectic attack—much more complete than occurs in saturnine hemiplegia. On the other hand, the disturbance of sensation is absent, or far less pronounced in the apoplectic cases. As a rule, too, the electro-muscular contractility is not so well preserved, owing to the saturation of the system with lead; but the electrical reactions are not conclusive in distinguishing between these forms of hemiplegia in lead-poisoning, nor are the reflexes. On the whole, the distinction is generally not difficult. Yet that it may be so is proved by an instance mentioned by Duchenne as occurring in Trousseau's clinic, which that master regarded as purely saturnine. There was normal electro-muscular contractility and sensibility, and at the autopsy an extensive clot was found on one side of the brain.

In the instances of paralysis of acute onset, such as the one described

[1] Archiv für Psychiat., vol. x. Part 2.
[2] Elektro-therapie, ii. Aufl. 32, Beob.; also referred to in Nervenkrankheiten, p. 607.
[3] Berlin. klin. Wochensch., March, 1874.
[4] Transactions of the Clinical Society of London, 1893.

in this paper, it is not likely that any structural disease in the brain other than local alterations of the circulation and some effusion exists. The disturbance is caused by the lead circulating in the blood and acting on motor centres or motor paths as a poison, directly, or by changes produced in the blood, though the further thought of a thrombosis or of minute embolisms from the altered blood suggests itself. We have no positive evidence in these hemiplegias that there is no anatomical change in the nervous textures; we can only reason from analogy from what has been observed in other encephalopathic affections of quick development that there is none. Thus, Oliver[1] extracted lead from the brain in cases of lead-poisoning in which death was rapid, but found the brain-substance pale, œdematous, and soft, with accumulation of subarachnoid fluid, and membranes normal, or the veins gorged. In Stewart's cases,[2] dying in convulsions, lead was found in the brain, but there were no marked signs of disease beyond those of congestion. Trimborne,[3] in a case resembling tubercular meningitis, found the brain to be intensely anæmic. The part of the brain for which lead has a particular affinity is indicated by the researches of Maier[4] to be the cortex.

This paper is offered as a contribution to a subject which, however ardently it has been worked at, still presents itself constantly in new or in complicated and rare forms.

ON THE TREATMENT OF GRAVES'S DISEASE BY MEANS OF THYMUS GLAND.

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DURING the last year and a half a number of cases of exophthalmic goitre treated by thymus gland have been published in the medical journals in various parts of the world. I have been frequently asked to give my opinion as to the value of this mode of treatment, which I have been employing in a certain number of cases for two years. I have hitherto refrained from doing so, because I was anxious to give the method a fair trial and was conscious that nothing was easier than to draw erroneous conclusions as to the effect of remedies in such a malady as Graves's disease.

Every physician who has had much experience of this disease will

[1] Med.-Chirurg. Transactions, vol. lxxiii. 1890.
[2] Phila. Med. Times, June and December, 1887, and January, 1889.
[3] Centralblatt für klinische Medicin, March, 1891.
[4] Virchow's Archiv, vol. xc.

agree with Möbius when he exclaims regarding the effects of drugs upon it, "*Wie viel Täuschung bereiten therapeutische Versuche!*" I think, however, the time has come when I should put on record some account of the cases treated by this method and endeavor to arrive at some conclusion as to whether the thymus gland has any decided therapeutic action or not on the symptoms or course of this disease.

My attention was first called to the subject by reading an account of a case, published by Mr. David Owen, of Manchester, in which great benefit was stated to have followed enormous doses of thyroid gland, the largeness of the dose having been due to a mistake on the part of the butcher. The dose amounting to one-quarter of a pound, I was convinced that so much thyroid was not likely to have been supplied by a butcher by mistake, and I pointed out to Mr. Owen that quite a large number of sheep's thyroids would be necessary to make up a quarter of a pound. Mr. Owen then, on investigating the matter, found that it was a thymus and not thyroid which had been given. Mr. Owen published a further account[1] of the case, stating this and endeavoring to explain the mode of action.

The total number of cases so far recorded, treated in this way, which I have been able to find, amounts to thirteen. I am able to add to this number two treated by Dr. Metcalfe, of Newcastle, of which he has kindly sent me the particulars, bringing the number up to fifteen. The cases treated by myself, which I propose to publish in this communication, amount to twenty.

The one symptom which, above all others, I have found almost quite uninfluenced by remedies of any kind is the rapid action of the heart. No drug with which I am acquainted can be depended on to reduce the frequency. Constantly, when the other symptoms have subsided and the general health has greatly improved, I have found the heart still beating quickly. If it were, therefore, found that under the influence of thymus the heart was conspicuously slowed down, I should attach great importance to this fact.

Next to rapidity of heart, the exophthalmos is the most obstinate symptom. I do not know of any drug which has any effect on it. True, it generally abates, sometimes entirely disappears, as the disease passes off; but frequently permanent prominence of the eyes remains. If thymus produced rapid diminution of exophthalmos, I should also attach great importance to this.

The effects of a drug on the thyroid gland are much more difficult to study. In the natural course of Graves's disease the goitre frequently progressively diminishes, and in a late stage no enlargement may be perceptible. On the other hand, it frequently fluctuates in size, enlarging at menstrual periods or under other conditions. While, therefore, thymus was being given, if the goitre enlarged, I should not consider

the drug could have much specific action; and if, on the other hand, it diminished, I should not feel justified in attributing this result to the drug without other evidence.

I consider it very unsafe to draw conclusions from general improvement in the condition and state of nutrition of the patient. This so frequently occurs, whatever mode of treatment is carried out, as well as when no treatment at all is employed, that it must be considered in most cases as a natural result, and not as the effect of drugs.

It is idle to speculate as to the mode in which thymus influences the disease until it is established that it does influence it. Previously to trying thymus I had tried the effect of thyroid and several other animal tissues in this disease. I did not try the thymus on account of the fact that this gland is frequently found to be persistent in fatal cases.

From this fact I did not anticipate any likely therapeutic action. The last of my series of cases treated by thymus gland is specially interesting on account of the persistence of the thymus gland, and the fact that histological examination showed it to present the structure of a functionally active gland.

Those who are interested in speculations as to why the thymus should prove useful may read Mr. Owen's second paper, already referred to, or an article by Dr. Metcalfe,[3] who, starting with the assumption that the thymus is the specific for Graves's disease in the same way that the thyroid is for myxœdema, proceeds to give a very ingenious explanation of how it acts.

Before relating the results of my own experience I shall very shortly review the cases recorded by others.

CASE I. Observer, D. Owen.[1]—Male, laborer, aged forty-six years. Duration twenty years. Exophthalmos marked; goitre slight; pulse-rate 126.

Treatment. One-quarter pound of sheep's thymus daily for two days, and then, after a week, given in doses of a quarter of a lobe daily. Steady improvement. The exophthalmos and the fulness in thyroid region disappeared. Pulse-rate reduced to 76. Patient became able to do heavy work without the slightest discomfort. On discontinuing the treatment gradual return of some of the symptoms, viz., palpitation and loss of energy, which disappeared on resuming the thymus. The amount found necessary to keep him in health was one lobe once a week.

CASE II. Observer, J. Mikulicz[4] (Breslau).—Female, aged forty-four years. Duration many years. Exophthalmos to a high degree; goitre large since seventeen years of age; pulse 120–132; usual nervous symptoms; systolic murmur. Admitted to hospital for stridor and symptoms of tracheal pressure.

Treatment. Sheep's thymus at first in small, later in large doses; 375 grammes taken in six weeks. *Effects:* striking improvement; exophthalmos lessened; goitre unchanged; pulse-rate reduced 20–30 beats per minute; stridor and dyspnœa only troublesome on exertion; greater capability for exertion than for many years.

Cases III., IV., and V. Observer, R. H. Cunningham, M.D.[5]

Case III.—Female, aged twenty years. Duration two years. Exophthalmos fair amount; goitre moderate; pulse 124; insomnia.

Treatment. Lamb's thymus slightly broiled (amount not stated). Improvement after a few days. She then went to a neighboring State, and it is not recorded whether she continued to take the thymus or not. Gradual improvement. Five months later no exophthalmos, no goitre, pulse 72, general condition excellent.

Case IV.—Male, age not stated. Duration four years. "Prominent eyes;" goitre slight; pulse 100–110; severe insomnia.

Treatment. Irregular administration of lamb's thymus, slightly cooked, for two weeks. Result: eyes gradually became less prominent; pulse fell to 78; general condition improved.

Case V.—Female, age and duration not stated. "Usual symptoms;" goitre marked; pulse 124.

Treatment. Twelve to fifteen 5-grain tabloids of thymus daily; goitre very considerably decreased in a week; pulse in two and a half weeks 96, but readily mounting to 120 after moderate exertion; increased energy and strength.

Case VI. Observers, MM. Taty and Guérin[6] (Lyon).—Woman, age and duration not stated. Well-marked symptoms; goitre; mental trouble.

Treatment. One and one-half kilos of calf's thymus administered in two months. No effect on goitre, tremors, or nervous symptoms. Loss of weight 2.6 kilos.

Case VII. Observer, Robert J. Edes, M.D.[7]—Female, aged thirty-four years. Duration a few months, but history of goitre cured by electricity several years ago. Prominent eyeballs; goitre small; pulse rapid and irregular; great nervous restlessness, bodily and mental.

Treatment. For eight months various remedies tried, without benefit. Pulse never below 104, but, on the whole, gain of flesh and diminution of restlessness. Then treated with dried aqueo-glycerin extract of thymus, 4½ grains per diem. Relieved, but no very obvious change in the symptoms in three weeks. Continued treatment three months: goitre less; pulse 92–108; restlessness diminished.

Case VIII. Observer, Norman J. McKie, M.D.[8]—Female, aged thirty-nine years. Duration three years. Exophthalmos gradually increasing; never much enlargement of thyroid; pulse-rate generally 90 at least; symptoms soon yielded to rest and tonics in August, 1892. At Easter, 1895, treatment desired on account of prominence of eyes.

Treatment. Thymus-tabloids (5 grains), at first one, then two, and next three daily, after food. In three months exophthalmos nearly disappeared. Pulse-rate 75. On stopping treatment exophthalmos returned. Tabloids resumed, with noticeable benefit in a short time.

Cases IX., X., and XII. Observer, Arthur Maude.[9]

Case IX.—Female, age not stated. Duration eight years. Every known symptom with great severity; goitre large and increasing; gastro-intestinal attacks severe and prominent.

Treatment. Thymus-tabloids (10 grains) twice a day for several weeks. No effect. Then 45 grains given per diem. Rapid improvement, but repeated relapses on leaving off the tabloids. Amelioration of all signs. No effect on goitre.

Case X.—Female, aged thirty-nine years. Goitre since childhood.

No mention of exophthalmos. Symptoms: tremors, excessive muscular weakness, cardiac disturbance six years.

Treatment. Thymus-tabloids (15 grains) twice a day for two months. Result: great improvement of all symptoms, especially tremor and loss of muscular power.

CASE XI.—Female, aged forty-seven years. History of Graves's disease at seventeen years of age, with complete recovery after a few years. Always emotional and excitable. Slight proptosis and occasional thyroidal swelling, November, 1894. No disturbance of heart until January, 1896. Sudden death of husband in May, 1896, caused outburst of all the usual symptoms. Steady improvement under administration of fluid extract of thymus for two months. Dose not stated.

CASE XII.—Female, aged fifty years. Goitre since eighteen years of age. No signs of Graves's disease until the age of forty-six years. All the usual signs with various nervous symptoms. November, 1895, sudden profuse hæmatemesis, after rallying from which treated with 45 grains of thymus-tabloids three times a day for a month. Remarkable improvement.

CASES XIII. and XIV. Dr. G. Metcalfe, of Newcastle-on-Tyne.

I am indebted to Dr. Metcalfe for permission to give particulars of these two cases, which have not, I believe, been previously published.

CASE XIII.—Female, aged forty-five years. Duration of main symptoms twelve months, but palpitation three years, since shock resulting from sudden death of her sister in her presence. Exophthalmos marked and goitre moderate; pulse 120; great emaciation and anæmia, along with the usual nervous and mental condition.

Treatment. At first bromide, belladonna, and arsenic with no benefit. Then sheep's thymus two ounces a day, slightly fried in butter, started April, 1895. After a month of this treatment distinct improvement. Seven pounds in weight gained between the middle of May and middle of June. By August, the signs of Graves's disease had almost wholly disappeared. Maximum pulse-rate 90; no palpitation; no exophthalmos; no enlargement of thyroid. In December, 1895, strong and robust, well nourished. The glands now only taken occasionally. No other medicines taken. When stopped no immediate effect, but after a month nervousness and palpitation return, subsiding on resuming the medicine. Very enthusiastic about the treatment and considers herself cured thereby.

CASE XIV.—Female, age and duration not stated. Marked exophthalmos; enlarged thyroid several years; palpitation and nervousness.

Treatment. Thymus gland ordered in September, 1895. In a month the thyroid gland was reduced to normal size, palpitation and nervousness had disappeared, and the ocular signs were gradually subsiding.

CASE XV. Observer, Charles Todd, M.B.[10]—Female, aged twenty-two years. Duration three years. Exophthalmos moderate; goitre two years, size not stated; pulse 156, irregular; insomnia and palpitation troublesome.

Treatment. No benefit from the drugs ordinarily employed. Thymus-tabloids (30 grains a day) started September 30, 1895; gradually increased up to 100 grains a day. At the end of three weeks pulse 72, regular; exophthalmos less marked; goitre unaltered; improvement in general condition.

Summary of Preceding Cases. It will be seen from the preceding that the treatment was followed by considerable improvement in the patient in every case but one, viz., No. VI. In this case the calf's thymus was used in large doses, averaging about three-quarters of an ounce a day. In seven of the cases a very striking fall in the pulse-rate is explicitly recorded.

In three cases the exophthalmos disappeared, in one case it nearly disappeared, and in four cases it was lessened. In the remaining eight cases the result, as regards the eyes, is not specially mentioned.

As regards the goitre, in four cases in which it was large there was no change; in four cases no effect is noted; in three cases a slight enlargement disappeared; in two cases there was diminution in size; in one case the swelling was noted as never much, and in another as only occasional. Improvement in the general condition of the patient was noted in fourteen.

As regards the dose given, it varied between ¼ lb. and 4½ grains in the day. Lamb's or sheep's thymus was given in six cases, in four slightly cooked and in two raw. In six cases thymus was given in the form of tabloids, and in two cases in the form of fluid extract. In the remaining case calf's thymus was given raw.

Large doses in two of the cases were successful where small doses failed. Two of the English firms who make thymus-tabloids inform me they use the calf's thymus, so that it is probable where tabloids were given that it was calf's thymus which was made use of. I have ascertained that the preparations used in Cases VIII., IX., X., XI., and XII. were derived from the calf. It must be borne in mind, in judging of the remedy, that it is probable it has been used without benefit in a considerable number of cases which have never been published. On this account it would be hardly fair to compare these cases, as I shall presently compare my own, with cases treated by other methods.

Dreschfeld,[11] in a recent article on Graves's disease, remarks that he has tried thymus gland in three cases without any marked benefit. Möbius,[12] in his recent work on Basedow's disease, mentions that he has treated several patients with slightly cooked calf's thymus for a shorter or longer time. They improved, but not more or sooner than under other modes of treatment.

I shall now proceed to relate the cases which I have treated myself, and shall then discuss them as a whole.

Case XVI.—Woman, aged thirty-six years, admitted to St. Thomas's Hospital August 25, 1894. Goitre one year; palpitation three years; moderate proptosis; pulse 104; slight tremors; nutrition good. The patient was kept in bed for a week and the pulse quieted down gradually, successive records being 96, 84, 82, 76.

On September 2d she was given calf's thymus lightly broiled, but

could eat only a little of it. The same evening her temperature rose to 100.2°, having previously been normal.

On September 3d and 5th she had some more thymus, and on September 6th she had some freshly expressed thymus juice. Her pulse on these days was 84, 78, and 72, while her temperature kept normal.

On September 7th and 8th she had half a thymus; on the 12th six ounces of thymus; on the 13th four ounces; and on the 15th four or five ounces were administered. Her pulse on the 8th was 60; on the 10th, 72; on the 13th, 76.

On the 17th she had thymus again. She said she felt much better and stronger. No pain under the heart, no attacks of palpitation. The thyroid was slightly less prominent.

On September 20th, however, the pulse-rate was again 100; on the 21st, 112; and on the 22d, 96.

The patient left the hospital on the 27th, feeling better, the thyroid a little smaller, pulse-rate 76, but otherwise *in statu quo*.

Between September 1st and 8th she lost two pounds, but between September 8th and 25th she gained six pounds.

She was recommended to continue the treatment on returning to her home in Luton. I wrote subsequently to my friend, Dr. W. B. Tomson, of Luton, to inquire how she was getting on, and he informed me that the patient had not gone on with the thymus and could not be persuaded to do so, and that she had altered little since leaving the hospital.

CASE XVII.—C. K., single woman, aged twenty-five years. Illness commenced at the age of twenty years, with weakness and anæmia. About this time she had a great deal of anxiety and nervous strain, and swelling in the throat made its appearance. The swelling, at first small, quickly increased to more than its present size. A few months later she was very much troubled with diarrhœa, weakness at the knees, and palpitation. Her eyes at this time began to get prominent. She continued in bad health for about eighteen months. As she recovered, she began to suffer with severe pains at the back of her eyes, which came on once a week and have continued to trouble her up to the present time. She was so far restored to health that she was able to return to business for some eighteen months, but in November, 1894, all her symptoms returned, the swelling in the neck, proptosis, and palpitation being once more conspicuous.

She attended at St. Thomas's Hospital as an outpatient for a short time, and was admitted under my care as an inpatient on July 3, 1895. Her condition was then as follows: nutrition fairly good; eyes, marked proptosis; Von Graefe's sign present; considerable enlargement of thyroid, the right lobe being greater than the left; no bruit on auscultation; very rapid cardiac action, 160 to the minute, irregular and extremely forcible; no murmurs at apex; systolic murmur at the base; fine tremors of hands well marked; skin darker, especially on back, than ordinarily with persons of her complexion. After a few days' rest in bed the pulse quieted down to 102.

She was ordered one calf's thymus gland daily in the form of cold watery extract. She had this for the first time on July 8th, and subsequently had it fairly regularly for over three weeks.

The usual amount employed was eight or nine ounces. The patient expressed herself as feeling better while taking the thymus extract, but none of the objective symptoms appeared to be affected; thus the

exophthalmos, the goitre, the tremors, the looseness of the bowels, and the heart-rate remained as before. Thus on July 29th the pulse was 112. The patient left the hospital on August 4th, practically *in statu quo*.

The patient wrote to me on April 17, 1896, saying she was now feeling very much stronger, but some weeks was much better than others. The throat and eyes remained about the same, the heart palpitated very much at times, and she still suffered from shakiness and pains at the back of the eyes.

CASE XVIII.—Male, aged twenty-seven years; very marked exophthalmos; emaciation; rapid cardiac action; pulse 120, but no obvious thyroid enlargement. The patient was very tall and weighed 148 pounds.

He came under treatment on December 18, 1894, and was ordered three 5-grain tabloids of thymus three times a day, and 10 minims of tincture of belladonna. After fourteen days he said he felt stronger and better. Pulse 116. On January 1st he was ordered fifteen 5-grain tabloids a day. On January 15th pulse 120. Better on the whole, but some days well, others worse. He was then ordered belladonna and bromide. On February 19th his pulse was 96. He had considerably improved. His weight had gone up to 163 pounds, a gain of over 14 pounds.

CASE XIX.—C. T., female, aged forty years, attended September 4, 1895. She had a moderately enlarged thyroid, and complained of palpitation, trembling, attacks of fainting. No exophthalmos. Her pulse-rate was 112. For two months she was treated with a quinine and iron tonic; then, for two months, with belladonna and digitalis, and then again with an iron tonic. No distinct improvement in the goitre or symptoms. The goitre, indeed, slightly increased.

On March 11, 1896, I put her on extract of thymus, ʒj b. d. After six weeks' treatment no marked effect had been produced.

CASE XX.—Female, aged twenty-nine years, married. She had been under my care and observation four years with well-marked signs of Graves's disease. Duration of disease five and one-half years. Goitre, exophthalmos, palpitation, etc., all well marked. Course of disease characterized by remissions and exacerbations. In January, 1894, premature confinement at five or six months, followed by flooding, after which symptoms of disease were aggravated. Eyes very prominent, thyroid gland a good deal enlarged, tremors, breath very short, palpitation.

On September 25th pulse 104. Ordered three 5-grain tabloids of thymus three times a day. On October 2d pulse 96. General condition better; five 5-grain tabloids ordered three times a day for a week. Patient, however, did not attend again until January, 1895. She then said she had been better for a time, but her condition was again *in statu quo*.

CASE XXI.—Female, aged twenty-four years. *Forme fruste.* Small goitre; rapid cardiac action; pulse 120; tremors; no exophthalmos.

Ordered one 5-grain tabloid of thymus three times a day. This she took for eight weeks, at the end of which time no obvious improvement had taken place. Pulse still 120. She continued the treatment for six weeks more, without obvious effect.

CASE XXII.—A. B., female, aged thirty-four years, attended May 9, 1896, complaining of weakness and nervousness, prominence of the

eyes, want of energy, etc., for the last six weeks. She had a moderate enlargement of the thyroid; her neck measured thirteen and one-half inches in circumference. The neck had been swollen for four or five years. The exophthalmos was only slight. Pulse 126; weight 98 pounds, formerly 114 pounds.

She was treated with sod. phosph., gr. xv t. d., and extract of thymus (1 in 1), ʒij b. d. These she took for a month, and felt better for them, but there was no striking change in her condition.

Case XXIII.—E. E., female, aged twenty-two years, attended February 19, 1896. Her throat had been enlarging for four years, and for the same time she had suffered from palpitation and nervousness. Her eyes had been prominent for two years. Pulse 122, regular. Moderate uniform enlargement of thyroid; neck-circumference thirteen and one-quarter inches; exophthalmos moderate. There was very considerable œdema of the legs. The urine contained a third of albumin. Her weight was 112 pounds.

Treatment. For the first seven weeks I treated her with tincture of belladonna, ♏x; sod. phosph., gr. xv t. d. The œdema soon disappeared and the amount of albumin in the urine greatly diminished. She increased 8 pounds in weight. The eyes became less prominent, but the heart still continued rapid. I next treated her with sod. phosph., gr. xv; extract of thymus, ʒj t. d. She took it for fourteen days without benefit. On May 6th I noted "Not so well; no strength; ravenous appetite; very thirsty; pulse 130. Thyroid considerably enlarged, measuring five inches across. Weight 121 pounds." On May 20th I again put her on the extract of thymus, which she took for two months, and appeared decidedly to improve in general condition. Her pulse quieted down to 98. The goitre slightly diminished, the neck-circumference becoming twelve and one-half inches.

Case XXIV.—M. E., female, aged twenty-three years, single, servant, under my care off and on for nearly four years.

She first came under my care at the Royal Free Hospital in September, 1892. She had then been ailing about two months, having for that time felt tired and unfit for work. She had been noticed by her friends to have become irritable and nervous, although naturally not at all so. Her father had died suddenly about six months previously, and this had much affected her at the time. No previous illness; always strong and well until present attack. History of rheumatism in the family, patient's mother having had rheumatic fever three times, and sister having aortic valvular disease. Her condition at that time was as follows: "Nutrition fairly good; weight 106 pounds, in dressing-gown. When last weighed, about two years previously, she scaled 126 pounds. Eyeballs noticeably prominent, giving patient a wild, startled look. Palpebral fissure decidedly increased. Sclerotic seen both above and below the iris when patient looks straight in front. Glistening of conjunctivæ. Eyes quite covered by eyelids when the latter are closed. Von Graefe's sign absent. Thyroid moderately and uniformly enlarged; breadth four inches. Circumference of neck twelve and one-quarter inches. Uniform brown pigmentation of the whole body except the face. Heart rapid and irregular. Pulse 112.

The patient was kept in bed and treated with belladonna and a variety of other remedies. At first the thyroid increased somewhat in size, and then gradually diminished. The patient steadily increased in

weight from 106 pounds to 120 pounds. Throughout the whole period of her stay in the hospital, extending over four months, the pulse kept up about the same rate, between 112 and 120.

She subsequently attended under me as an outpatient at St. Thomas's. Very little exophthalmos and little enlargement of the thyroid remained, but the pulse-rate continued rapid.

On November 14, 1894, she returned, having been absent nine months. She stated she had not been so well lately. Her pulse was 120. No difference in eyes or thyroid. Weight 133 pounds. Face plump. I ordered her thymus extract (1 in 4), ♏xx t. d., and tincture of digitalis, ♏v t. d. She came back in a fortnight saying she felt better while taking the extract, the supply she had been given having, however, only lasted a week. Pulse 118. The mixture and extract were repeated for fourteen days. December 12th, pulse 138; both medicines repeated for three weeks. January 2d, pulse 120; she continued to take the same medicines for three months longer. She slightly increased in weight, going up to 138 pounds.

No marked difference was ever observed in the rapidity of the pulse. She was quite certain herself that the medicines made her feel stronger and better and less nervous.

Case XXV.—Man, aged forty years, engine-fitter; extremely marked case. Duration of symptoms six months. History of five attacks of influenza. Shock twelve years ago; squeezed between railway buffers.

In July, 1894, patient found his neck increasing in size so that he was obliged to purchase larger collars. Within ten days the circumference increased from fourteen to sixteen inches. He also found that the exertion of walking up hill caused shortness of breath. Toward the end of September he sought medical advice, but gradually became worse. The breathing especially became more difficult, and he experienced a sense of suffocation, sometimes filling him with a dreadful sensation as if a strong hand were gripping him by the throat. As the neck was not increasing in circumference he thought the enlargement must be going on internally, and feared the consequences might be fatal. Walking up hill became almost impossible. On October 14th he was no longer able to continue his work, and became an inpatient of the hospital about October 27th. He was kept in bed and under treatment for a month; the throat grew smaller and breathing easier, but he lost flesh and strength during that time. He then attended as an outpatient under me.

On December 5th I noticed extreme exophthalmos, upper lid much retracted. Emaciated; weight, which was formerly 140 pounds, now 118 pounds; marked tremors; extremely fidgety manner; thyroid uniformly and considerably enlarged; circumference of neck sixteen inches; pulse 160; great thirst and large appetite; urine normal; profuse sweating; skin generally dark, muddy-colored. He was exceedingly weak and was obliged to have assistance to get about and to visit the hospital.

He was ordered extract of thymus (1 in 4), ♏xx t. d. On December 19th, when next seen, he was found to have lost six pounds in weight. His pulse was still very rapid, 150. The urine now contained a small amount of albumin. The thymus extract was increased to ʒss t. d. On January 2d he was found to have lost still more in weight, being

only 108 pounds. Pulse still 150. Urine, trace of albumin. The thyroid enlargement distinctly less. Neck now measured fourteen and one-half inches in circumference. Exophthalmos quite as well marked. Thymus extract continued in small doses.

On January 16th he reported that he had been bad all the past fortnight, especially with palpitation of the heart. Pulse 180 at first, 130 later. He felt he was getting weaker and weaker, and feared every visit would be his last. Thymus extract continued.

On January 30th still very weak and ill. During the last fortnight he had slight convulsive attacks which alarmed him very much. Further loss of two pounds in weight. Pulse 122–136. Urine, a trace of albumin. The thyroid enlargement still less. Neck now only fourteen inches in circumference.

He was ordered potassium bromide, gr. xv; tincture of belladonna, ♏xv; tincture of sumbul, ♏xx. A.M., P. ʒj t. d. in addition to the thymus extract. On February 14th, much better. No more convulsive attacks; weight as before; pulse 145; medicine and thymus repeated.

On February 28th looking and feeling decidedly better. Skin clearer; pulse 126; urine free from albumin; weight 107 pounds.

From this time the patient steadily improved. He regained weight, became stronger, less nervous, and had less and less palpitation. His pulse, however, continued rapid.

On April 24th I noted weight, 127 pounds; pulse 118; urine, no albumin; feeling fairly strong and able to be out of doors at work again.

He continued to take the same medicine until August 17, 1895. Weight now 130 pounds; pulse 92. A change was made in his medicine, the bromide and sumbul being omitted; but he did not feel so well, and after three weeks he was put back on the original mixture, the thymus being discontinued.

On October 12th his weight had further increased to 133 pounds. Pulse 110; eyes less prominent; face clearer and fuller. He looked very much better. Neck-measurement fourteen and one-half inches. At his own request he was given the thymus extract, ʒj t. d., in addition to the mixture.

December 14th, continuing in fairly good health. Weight 136 pounds; pulse 88. Thyroid enlargement rather greater again; circumference fifteen inches.

On January 4th the thymus extract was increased to ʒij b. d. January 25th, weight 137 pounds; pulse 86. February 15th, pulse 80; neck-circumference sixteen inches, and thyroid gland certainly larger. Belladonna and bromide mixture discontinued. Weight 136½ pounds. March 7th, thymus suspended. Pulse 88. Ordered red marrow extract and sodium phosphate. March 21st, not so well since medicine changed. Red marrow stopped. April 18th, pulse 104; weight 136 pounds; neck-circumference sixteen inches. Ordered extract of thymus (1 in 1), ʒij b. d. May 9th, pulse 118; weight 133 pounds; neck fifteen and one-half inches. May 30th, pulse 110; weight 133 pounds; neck fifteen and one-quarter inches. Has been working hard during the last week and feels more shaky.

Case XXVI.—Woman, aged forty years. First came under treatment July 16, 1892. Usual symptoms of Graves's disease. The com-

plete original notes of her case have been lost, so that I am unable to give exact particulars as to the previous duration, causation, etc. The most marked feature of the case was the patient's extreme nervousness, characterized by tremulousness and excitability. Exophthalmos decided, but not extreme. Von Graefe's sign present. Thyroid enlargement moderate. Cardiac action rapid, 112 to 130. Heart, no evidence of organic disease. Patient was treated with belladonna for several months, with some benefit to her nervousness and general health. Various other drugs were tried, but she said none suited her so well. She looked and felt better and improved in nutrition. The eyes became less prominent, but the pulse remained persistently rapid, being generally 120.

I did not see her from April, 1893, to December, 1894, and during that time she enjoyed better health than she had done for a considerable time before she began to attend.

In December, 1894, I noted "moderate exophthalmos; slight Von Graefe's sign; pulse 136, tremulous; no distinct enlargement of thyroid now; weight 107½ pounds; skin muddy-colored."

I prescribed for her extract of thymus (1 in 4), ℥xx t. d. She continued to take this for four months. Her pulse during this time was generally much quieter than it had been while she attended previously, the records at intervals of three or four weeks being 104, 88, 92, 104. She looked and felt better, and her skin became clearer. Her weight remained the same. She attended subsequently from November, 1895, to March, 1896, when her heart was again troubling her and beating at the rate of 120 to the minute. For the first fortnight I treated her with extract of thymus, ʒj t. d.: her pulse fell to 96. I then treated her without the thymus, and her pulse varied between 120 and 108; but this fact was not surprising because she had sustained a fracture of the radius, which no doubt aggravated her symptoms.

Case XXVII.—A. S., female, aged twenty-five years; married four years; one child living, aged three years; one dead, born five weeks before admission.

Palpitation commenced four years ago. Soon afterward the eyes commenced to get prominent, and gradually became markedly so. During the same time she has, in addition, been troubled with shortness of breath on exertion, nervousness, trembling, cramps in the legs, giving way of the knees, and diarrhœa. She has lost flesh to a considerable extent.

On admission, October 19, 1895, eyes very prominent. ("Three weeks previously the left quite came out, and had to be pushed back again.") Von Graefe's sign well marked. No enlargement of the thyroid, but some prominence of the upper part of the sternum. When the patient was previously under my care in July, 1894, there was then slight enlargement of the thyroid. Heart 126, quite regular; sounds healthy; abdomen much pigmented; walls flaccid, due to recent confinement; hands show fine tremors; urine normal.

During the first ten days the patient was kept at rest in bed, but no medicine was given. The pulse-rate varied between 100 and 134, the latter rate being noted on the 30th. She complained of palpitation occasionally, but otherwise had no subjective symptoms.

On October 30th she commenced to take ʒj of (1 in 4) thymus extract three times a day, being equal to 45 grains of thymus daily. On the 31st she complained of palpitation of the heart, which had kept her

awake most of the night. The pulse was very irregular, every fourth or fifth beat not being conducted to the wrist. Cardiac action 118.

On November 4th she complained of pains in the eyes and of dimness of sight; and on November 5th, on waking, she said she was unable to see at all. She also complained of aching pain on each side of her neck in the region of the thyroid gland, and also of pain at the back of the neck at the same level. On November 6th the thymus extract was discontinued. On the 8th the patient was ordered extract of belladonna, gr. ¼ every six hours. She was kept in the hospital until December 29th.

From November 8th to November 30th the pulse, on the whole, was less rapid than previously; but during the whole of December it was rapid, varying between 130 and 102. No real improvement occurred in the eyes. The patient, however, before leaving the hospital stated she felt better, and that she did not get so easily tired as formerly.

The thymus treatment in this case was only carried out for a week, and the patient altogether had little more than three-quarters of an ounce of thymus during that time. It was discontinued because the patient seemed to be rather worse while taking it than she was before.

CASE XXVIII.—R. N., woman, aged twenty-five years, single, servant. Date of first attendance, May 8, 1895. Well-marked signs and symptoms of Graves's disease. Duration eighteen months. Decidedly better last nine or ten months than during first period of illness. Has had no treatment except for a fortnight for palpitation of the heart and weakness after an attack of influenza in January, 1890. Eyes, very marked proptosis; dislocation of right eyeball two months ago; got it back herself; never spasm; the right eyeball appeared to be rather the more prominent; Von Graefe's sign very well marked; thyroid gland uniformly and considerably enlarged; pulse 120 to 125; palpitation moderate; trembling has accompanied the palpitation; no marked loss of flesh; weight 110 pounds; looks well nourished; subject to flushings and heats, and feels better in cold weather; appetite good; no disturbance of digestive organs.

Patient was treated with tincture of belladonna, ♏x, potassium bromide, gr. xx t. d., for fourteen days without any change. Then, in addition, she was ordered extract of thymus (1 in 4), ʒj every night. She continued taking both for seven weeks. She said she felt decidedly better, but no change was apparent either in the proptosis, the size of the thyroid, or in the pulse-rate. The thymus extract was continued for five months longer, an alkaline tonic being given in addition. The thyroid certainly diminished in size, the neck losing an inch in circumference. The patient lost a few pounds in weight. The pulse continued rapid, 126, and the eyes remained quite as prominent. Her general condition certainly improved, and she felt stronger and capable of greater exertion.

CASE XXIX.—A. W., aged thirty-two years, married; one child, aged nine years; first attended August 25, 1894. She presented all the signs of Graves's disease in a marked degree. There was marked proptosis; the thyroid was much enlarged, the right lobe more so than the left; the pulse was 140; and the patient suffered much from palpitation.

She stated she had always been very nervous, and had suffered from headache, palpitation of the heart, and trembling, since childhood. Her

eyes had been prominent for the last two or three years, but she could not say definitely when they first began to protrude. In the beginning of 1894 she had violent pain in her chest, especially affecting the heart and left side. She consulted a doctor, and he presently noticed that the neck was beginning to swell. In addition to palpitation, she was much troubled with profuse sweating.

The patient had returned two years ago from Brazil, where she had been resident for eight years. During the last two years of her residence a revolution was going on, and the patient was much frightened by the firing, etc.

When a child she had measles, scarlet fever, and English cholera. She had also then frequent attacks of epistaxis. One of her brothers died of epileptic fits.

For the first five weeks the patient was treated with a mixture containing 5 minims of tincture of digitalis, which was taken three times a day. Her pulse-rate was as follows: September 8th, 116; 22d, 156; 29th, 84.

The exophthalmos was certainly less on September 29th than it was when she first attended, but the other signs were unaltered.

On September 29th she was ordered extract of thymus, ℥xx t. d.; tincture of belladonna, ℥x; inf. gent. comp., ℥j. A fortnight later the latter was changed to potassium bromide, gr. x; inf. gent. comp., ℥j t. d., as the patient complained of weakness of accommodation. She went on taking the thymus extract and the second mixture until January 12, 1895.

The heart continued to act rapidly, sometimes very much so. The trembling and sweating remained to a marked degree. The patient herself, however, stated that she felt very much better. The thyroid certainly diminished very considerably in size.

On January 12th the mixture was changed to potassium bromide, gr. x; tincture of belladonna, ℥x; inf. gent. comp., ℥j t. d.; and the thymus was continued as before. During the next two months the patient was troubled a good deal with looseness of the bowels. She lost exactly fourteen pounds in weight between her first attendance and March 2d. On this date her pulse was 126; the thyroid enlargement was noted as only slight and the proptosis moderate. She now ceased attending.

On her return six months later, October 5, 1895, she considered herself now quite well. She was able for ordinary household duties. She had nearly regained her former weight, the proptosis and the thyroid enlargement were scarcely noticeable, but the pulse-rate was still too quick, being 104.

I have seen her several times since, when she has brought a sister to consult me, and she has appeared to have continued in good health and considers herself quite cured.

Case XXX.—G. W., aged thirty-nine years, railway inspector, first attended February 29, 1896, presenting all the usual symptoms of Graves's disease. Duration of symptoms seventeen years. Twenty years ago he noticed swelling of the neck, which gradually increased. He first wore fourteen and one-half inch collars, then fifteen, now sixteen and one-half inch. At times, with improvement in his health, he has noticed diminution in the size of the swelling. He began to suffer from palpitation of the heart in 1879, which has continued more or less

ever since. His eyes, which were always somewhat prominent, have been decidedly more so during the last seven or eight years. He has had tremors of the hands and feet throughout life, but these became especially noticeable in 1883. Any excitement aggravates both the tremor and the palpitation.

Previous to the onset of illness he was fireman on an engine for three years, during twelve months of which time he had great cause for anxiety, as the driver was passionate and intemperate. His illness had never incapacitated him for work, and he had had no treatment. He has been married seventeen years, and has three healthy children. One of his sisters is mentally affected.

He now complains of cough, which he has had all through the last winter, as well as for several previous winters in succession. At irregular intervals paroxysms of coughing occur, and continue until retching is induced, whereupon the paroxysm ceases and the cough disappears for several hours. These attacks exhaust him very much. He suffers from them at intervals of a month or so.

During the last twelve years he thinks he has lost weight very much. Twelve years ago he weighed 135 pounds; last summer 127 pounds; now 118 pounds.

He was a dark-complexioned man with bronzed face and neck, markedly protruding eyes, and sunken cheeks. Exophthalmos distinct, but not extreme. Von Graefe's sign was well marked; the thyroid gland was considerably and evenly enlarged; neck-circumference at level of cricoid fourteen and one-half inches; marked throbbing of the carotids; heart-action rapid, 120; area of cardiac dulness increased to the left, extending one and one-half inches external to the nipple in the sixth space; no extension to the right of the sternum; no bruits; pulse 120, feeble; lungs normal; no enlargement of liver or spleen; urine 1030, acid; no albumin or sugar; no swelling of legs.

Treatment. For the first seven weeks he was ordered sodium phosphate, gr. xv t. d., with tincture of belladonna, ♏v, for the first fortnight. He was seen once a fortnight, and said he felt better each time.

On April 18th his pulse, as before, was 120; the circumference of his neck had increased half an inch; his weight was 124 pounds. I then ordered him, in addition to the sodium phosphate, to take two drachms of extract of thymus (1 in 1) every night.

Four weeks later I saw him again; he said he was feeling better generally. His pulse-rate and weight remained exactly as on the last occasion. The circumference of the neck had diminished to fourteen and one-half inches. Urine normal. He was ordered to continue with the medicine as before. On June 10th he was *in statu quo:* pulse-rate, neck-circumference, and weight as before. Two months' further treatment and observation showed no material change in his condition.

CASE XXXI.—Female, aged thirty-three years. This patient attended under me for six months in 1891. At that time moderate exophthalmos, moderate goitre, pulse 140, throbbing carotids, palpitation, pigmentation, tremors, nervous irritability. She improved under ordinary treatment. On April 17, 1896, she returned, saying her heart was troubling her very much. There was considerable enlargement of the thyroid, chiefly of the isthmus; pulse 100; no distinct exophthalmos. Treatment, 90 grains of thymus-tabloids a day.

May 1st, pulse 90, thyroid as before. May 15th, pulse 98, thyroid

decidedly larger. May 29th, pulse 90, thyroid still larger. Heart still troubling her. The patient ceased attending after this visit, having, as I think, derived no benefit from the thymus treatment.

CASE XXXII.—Female, aged twenty-six years. Duration of disease five years. Moderate and uniformly enlarged thyroid; circumference of neck twelve and one-quarter inches; moderate exophthalmos; pulse 120; condition of nutrition fairly good. At the commencement of the disease exophthalmos and goitre much more marked than now.

Treatment. No treatment had been tried for two or three years. Patient was able to work as governess, but was anxious for something to relieve her nervousness. August, 1895, I ordered her tabloid thymus, tabloid thyroid, āā gr. v b. d., which she took off and on for about a year. She stopped them twice, on account of palpitation, and once could not get them for a month. I saw her again in July, 1896. The eyes and thyroid were as before. Her pulse was 68, but irregular; and, on examining the heart, I found it beating at the rate of 110. Her general condition was certainly not improved.

CASE XXXIII.—A. J., female, single, aged twenty-one years, consulted me August 17, 1895. All signs and symptoms of Graves's disease well marked. Her eyes became prominent about two and one-half years ago; the neck became swollen two years ago; and she became short of breath three years ago. There was no history of any exciting or predisposing cause, except the occurrence of a slight gas-explosion in the house where she was living, shortly before she became ill. Among the symptoms from which she suffered were irritability of temper, extreme restlessness, intolerance of heat, disturbed sleep, perspirations, giving of the knees, weakness of the legs especially felt on going up stairs or getting into a carriage, attacks of palpitation and trembling, cramps in the fingers and toes, attacks of diarrhœa, thinning of hair both on scalp and eyebrows, and change of its color to a lighter hue. Lately she had had a troublesome cough coming on in paroxysms. She was always abnormally thirsty and hungry. She was well nourished and weighed 136 pounds, her height being about five feet. A year ago she had wasted almost to a skeleton, but had more than made up for what she had lost. The degree of exophthalmos was very considerable, the sclerotic showing both above and below, between the cornea and the eyelids. This was so much the case that people would call out after her in the street. There was also considerable enlargement of the thyroid, equal on both sides. The isthmus was broad. The circumference of the neck was fourteen and five-eighths inches; at one time it reached fifteen inches. She observed that the neck sometimes increased in size with exertion. Her pulse-rate was 102. There was marked throbbing of the carotids. A systolic bruit was audible in the pulmonary region. She was slightly anæmic. There was no pigmentation of the skin, but she had noticed that last year her skin had a muddy, grayish color.

A remarkable feature of her case was hypertrophy of the legs. The circumference of the calves was fifteen and one-half inches, and above the knee she measured seventeen and one-half and eighteen and one-half inches. She stated they were much larger than they were formerly. She had to get the largest-sized stockings, and "take in" the feet. There was no pitting œdema. The catamenia were regular.

Treatment. I ordered her to take a 5-grain tabloid of thyroid and

one of thymus, night and morning. She remained under the care and observation of Mr. South, of Boston, Lincolnshire, who had sent her to me. She continued to take the tabloids for a year. I saw her again August 8, 1896. She was feeling very much better; the improvement, as will be seen, appeared to be chiefly subjective. During the first six months the neck went down nearly two inches, its circumference diminishing to thirteen inches. It, however, increased again after that, and now measured thirteen and three-quarters inches. She said she had not been troubled much about the neck, on account of feeling so much better. The thyroid remained considerably enlarged, although not so much so as before. In the first six months her weight went down nine pounds, but in the second she gained five and one-half pounds. Her eyes were certainly not so staring, and less sclerotic was visible. Her pulse was 133, but palpitation had come on just as she got out of her cab to ring my bell. On the whole, however, she was not nearly so much troubled with her heart as formerly. She was less irritable, better able to bear heat, and had no unnatural hunger or thirst. Her legs were much stronger, and her knees did not give way. The enlargement still continued as before, and the measurements were the same. The most troublesome symptom had been the paroxysmal cough.

CASE XXXIV.—Female, aged twenty years, single, first came under treatment November 6, 1895. She had then marked exophthalmos, very rapid cardiac action, pulse 146, moderate enlargement of the thyroid. She said she had no strength or energy. Nutrition good. The thyroidal swelling and the other symptoms had only been present fourteen days. No history of shock or worry. No previous illnesses.

For fourteen days she took an alkaline tonic, without alteration in her symptoms. November 20th, pulse 138; weight 115½ pounds; urine normal. Ordered extract of thymus (1 in 4), ʒj; extract of thyroid (3 in 2), gr. j t. d. November 27th, pulse 132. Ordered double the amount of thymus. December 11th, pulse 142; weight 124½ pounds. December 18th, condition the same; pulse 128; thymus and thyroid discontinued. Ordered tincture of belladonna ♏x; potassium bromide, gr. x t. d. January 1st, weight 137 pounds; pulse 124. January 15th, weight 120½ pounds; pulse 152; weaker and more nervous. Ordered extract of thymus, ʒij t. d., in addition to mixture. January 29th, general condition better; good deal of pigmentation about the face; pulse 136; weight 121 pounds.

CASE XXXV.—Female, aged thirty-one years, single, housemaid, came under treatment November 9, 1895. Died January 19, 1896. When I first saw her all the usual signs of the disease were very well marked. She stated that she first commenced to suffer about five years previously. In the winter of 1890 a walnut-sized swelling appeared on the right side of the neck, in the situation of the thyroid gland. This soon increased in size, and the other side also became swollen. The swelling did not remain uniform, but sometimes was larger than at others. In August, 1895, the swelling was said to have quite disappeared on both sides. For about three weeks it remained quite away, and then suddenly grew again, larger than before. The eyes became gradually prominent, but this was not noticed until about two years after the appearance of the goitre. She had suffered from attacks of palpitation, ushered in by cramps in the hands. Everything has seemed a trouble to her. She has suffered from headache at the top of the

head and across the eyes. She stated she had been very bad in the summer of 1895, and had lost flesh very greatly, but between then and November she considerably improved.

When I saw her in November the goitre was of a considerable size, the right lobe being about the size of a Tangerine orange, and the left being about half that size. The exophthalmos was pronounced, but not extreme; the pulse was 128, and the tremors were very marked. Her weight was 116 pounds. She was ordered liquid extract of thymus, ʒj; liquid extract of thyroid, ♏v t. d. This was equivalent to 45 grains of thymus and 15 grains of thyroid in twenty-four hours. On November 16th the pulse-rate was 140; on the 23d it was noted that the thyroidal swelling had become much larger. On this date the thyroid mixture was discontinued, and extract of belladonna, gr. ¼ t. d., was given instead. On November 30th it was noted that the patient was very tremulous and had difficulty in breathing, while the thyroid was larger. The pulse was 154. The weight had fallen to 111 pounds. The patient was ordered liquid extract of thymus, ʒj t. d., in addition to the belladonna. She took this for a week and then discontinued coming for a time. On January 4th she attended again; her pulse was 142; she was very tremulous; her weight had now fallen to 89 pounds. She looked thin and ill, and I arranged that she should be admitted to the hospital without delay. She did not consider herself to be very ill, and a week elapsed before she entered the ward. All the symptoms were well marked, the degree of emaciation being the most noteworthy feature. The pulse-rate varied between 148 and 160. The thymus extract was continued for a few days, but was stopped, as the patient suffered from nausea. On January 16th she complained of pains all over her, and of a feeling as if she were going to be strangled. Her temperature rose slightly, and she had complete anorexia.

On the 19th she died. I made an autopsy next day. The body was extremely emaciated. There was generally darkening of the skin, especially marked on the face, abdomen, and legs. The thyroid gland was uniformly enlarged, each lobe being about the size of a hen's egg. The vessels on the surface were numerous and highly injected. The thymus was persistent, and was spread out over the upper part of the pericardium, forming a layer about one-quarter of an inch thick. A histological examination of the thymus was made by Mr. Walter Edmunds, F.R.C.S., who found it structurally identical with ordinary thymus tissue, containing the usual lymphoid cells and corpuscles of Hassall. There appeared to be no doubt that it was functionally active during life.

Summary and Conclusions. Of the twenty cases I have now recorded under my care, treated by the thymus gland, one died, and in six no improvement was observed. In thirteen cases there was some improvement. In none of these, however, have I observed any such decided effect produced on the most important symptoms, and on the progress of the disease, as could lead me justifiably to conclude that the thymus had any great therapeutic activity. For the sake of comparison, I propose to contrast the progress of these twenty cases with a similar number treated by other methods.

In the beginning of this paper I stated that the symptom which, up to the present time, I have found most intractable is the rapidity of the pulse-rate. One must, of course, avoid the error of taking the diminished frequency resulting from rest as a result of a remedy. In my cases I have endeavored to avoid this fallacy. In twelve of the cases no alteration in the pulse-rate was observed, and in two it increased slightly. In six it diminished; in all but one of these the diminution was only slight. In the one case in which there was very considerable slowing this improvement was only observed after the remedy had been taken for some months, and it seems doubtful whether the thymus had anything to do with the change, as the pulse-rate subsequently increased again while the remedy was still continued in large doses. Of the twenty comparison-cases no alteration in the pulse-rate was observed in eleven, and in two it increased slightly. In four cases there was marked but gradual diminution, and in three there was slight lessening of the frequency. It would therefore appear that, as regards the effect on the heart, there is nothing in favor of the thymus treatment.

As regards the thyroid gland, in only three cases was there a material diminution in size. In two cases the goitre actually increased in size while fairly large doses of thymus were being given, and in another it increased after first diminishing.

Of the contrast-cases, the goitre more or less diminished in four, and in a fifth the enlargement entirely disappeared. An increase in size was noted in only one case. In thirteen no change was observed.

It therefore appears that the progress of the enlargement of the thyroid has been much the same whether thymus was given or not.

The exophthalmos decidedly diminished in only one case, and in that it had commenced to lessen before the thymus treatment was started. In the contrast-series three lost their exophthalmos.

As regards the general bodily condition, in eight of the cases the weight was not recorded. In three there was no change. In four there was loss of weight. In three of these this amounted to only a few pounds; but in one of the three, the fatal case, there was considerable further loss of weight after the remedy was discontinued. In the fourth case the patient lost fourteen pounds in weight, but the loss was quickly made up for when the medicine was stopped. In a fifth case the patient lost weight to the amount of eleven pounds during the first two months of the treatment, but gained twenty pounds during the next two months. In four cases there was a marked gain in weight of from four to fifteen pounds. Of the comparison-series, I find loss of weight noted in only one and a marked gain noted in three cases, amounting to sixteen pounds in one case and thirty-five pounds in another. This, again, is somewhat in favor of the series treated without thymus, but I do not look upon the difference as at all significant.

The dose of thymus given varied from several ounces to ten or fifteen grains a day. The cases which had large doses did not appear to do any better than those treated with small doses.

At the same time it is quite evident, from the record of several of the cases, that the patients themselves were satisfied that the remedy benefited them. When it was discontinued they asked to be put back on it. In no case did it produce any unfavorable symptoms.

The combination of thymus and thyroid was employed in four cases —XXXII., XXXIII., XXXIV., and XXXV.—and in two of these it did not appear to be very well borne.

The last case, which was the fatal one, had no treatment for some weeks preceding her last illness.

The size of the thyroid enlargement appeared to make no difference on the progress of the case. About the same proportion of the cases, with little or no enlargement, did well as of those where there was a large goitre.

It will be observed that I prescribed other remedies along with the thymus in several of the cases, such as belladonna, bromide of potassium, sodium phosphate, etc. This would diminish the value of my observations, if I were endeavoring to maintain that the thymus gland had any specific value; but, as my thesis is that it has no specific influence, the administration of other remedies is not of material importance.

An important point which should be borne in mind is that the most remarkable of the cases of recorded benefit have been those in which the lamb's thymus has been employed. Möbius and Taty and Guérin, who failed to observe benefit, expressly mention that they employed the calf's thymus. I am not able to give exact particulars as to which form has been employed in all of my cases. The tabloids used were supplied by Messrs. Burroughs, Wellcome & Co., who informed me they were made from the thymus of very young calves. The extract of thymus was prepared for me by Mr. White, the pharmacist to St. Thomas's Hospital. It was prepared from lamb's thymus whenever it was procurable, and at other times from calf's. The calf's thymus was used in Cases XV. and XVII., in which large doses were used.

It seems unlikely that any important therapeutic effect should exist in the lamb's thymus and not in the calf's; the reported success of cases treated with tabloids of calf's thymus may be set against the failures.

The conclusion at which I have arrrived is that the thymus gland possesses no specific action in Graves's disease. I have found it in most cases to have no effect either on the heart, on the goitre, or on the exophthalmos. At the same time it appears to be a remedy of some value, improving the general condition, and, in this way, may assist toward the recovery of the patient. I should, at present, place it in the same class of remedies as cod-liver oil.

I am of opinion that the dose, to be of any use, should be at least one or two drachms a day, of the fresh gland or its equivalent, in the form of extract or powder.

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TYPICAL EXCISION *VERSUS* INVERSION OF THE VERMIFORM APPENDIX.

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The not infrequent occurrence of gangrenous inflammation of the appendix vermiformis, and the fact that, in a certain proportion of cases, the gangrene extends to the cæcal wall, make it very desirable to get rid of the entire appendix, whenever possible, in operative attacks upon the organ. Any method which leaves behind appendical tissue thus becomes the seat of inflammation, whether this be an inversion of the stump of the organ after amputation of its distal two-thirds (Dawbarn),[1] or inversion of the entire appendix (Edebohls), is faulty in technique exactly in proportion to the amount of appendical tissue thus allowed to remain. The last-named procedure is particularly unphilosophical. Its originator announces that he does not know what becomes of the inverted appendix, nor does he care.[2] I have ceased to trust an organ with such an especially strong predisposition to destructive inflammation as the one in question, tucked away in the intestinal canal with

[1] Medical Record, 1895, vol. xlviii. p. 291.
[2] The American Journal of the Medical Sciences, 1895, vol. cix. p. 650.

so complete an interference with its circulatory apparatus as to lead with almost positive certainty to subsequent and perhaps spreading gangrene of tissues. Its blood-supply is almost absolutely cut off by its severance from the meso-appendix, a condition which is found to obtain in cases of partial or complete gangrene of the organ in certain cases of appendicitis. In the latter an endarteritis obliterans of the branches of the appendicular artery, which pass from the margin of the meso-appendix across the latter structure to supply the appendix, is invariably found when sought for (Van Cott). Finally, strictures of the lumen of the organ, either congenital or acquired, are sometimes present and form an insuperable bar to the carrying out of the method. Further, in Edebohls's method there is absolutely no barrier to the spread of infection from the rotting appendix within the cavity of the bowel to the portion of the cæcal wall to which it still remains attached, from which point it is but a step further to the production of general septic peritonitis.

Under circumstances of opening the abdomen for prolonged operative procedures in cases in which it is very desirable to save every minute of time possible, there is great temptation to adopt a method which is certainly seductive in that it offers a most rapid as well as ready means of disposing of the appendix, with the end in view of preventing this organ from giving rise to troublesome disturbances in the future. It was with this object that I was recently induced to adopt the plan so highly recommended by Dr. Edebohls. The unfortunate termination of the case and the findings upon autopsy have completely convinced me that this is a most dangerous plan, and the error committed in following the recommendation of its originator would be but little short of a crime were I not to utilize the experience for the benefit of others who, like myself, attracted by the simplicity of the method and the ease and rapidity with which it may be carried out, may be induced to make trial of it.

The case was that of a patient who was referred to my service at the Brooklyn Hospital for operation for a right-sided pyosalpinx by Dr. Francis H. Stuart. The tube was found only moderately involved, and was easily isolated and removed. The left ovary was found to be about three times its normal size and studded with cysts of varying size; a double oöphorectomy and salpingectomy were therefore done. The appendix vermiformis was located in the S.E. position (downward and inward), and was freely movable in the abdominal cavity. As the element of time was important in this case, its inversion after the method of Edebohls was resorted to and accomplished with extreme ease. The patient rallied from the operation completely, and all went well with her for forty-eight hours, when indubitable symptoms of septic peritonitis developed, of which she died between the third and fourth days. The autopsy, conducted by Prof. Van Cott, the pathologist to the hospital, revealed a septic peritonitis having its starting-point at

the cæcum, which was gangrenous at the site of the inverted appendix. This portion of the large intestine was removed and its interior examined. The appendix, hanging freely in the cavity of the bowel, was gangrenous in almost its entirety, and several gangrenous patches, some of which were as large as a silver five-cent piece, existed upon the cæcal wall.

The device of Dr. Dawbarn, that of inverting the stump of an amputated appendix after throwing a loose purse-string suture about its base, is ingenious and easily executed in a certain proportion of cases. The open end of the organ gives access to the interior and affords opportunity for attempts at dilatation should stricture be present. That attempts to invert the organ do not always prove successful, however, I have learned from experience.

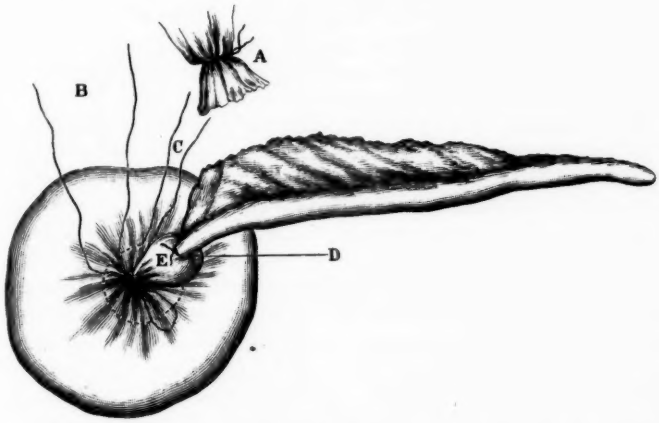
In the case of a young female from whom I removed the appendix at St. Mary's Hospital, Dawbarn's method of disposing of the stump was attempted. There seemed to be no difficulty in accomplishing the inversion. There was observed to be a communication between the lumen of the appendix and the cavity of the cæcum, as announced by the free escape of gas when the amputation was made. The patient died on the tenth day following the operation from a pulmonary condition entirely unconnected with the operation. The parts were examined after death by my assistant, Dr. Walter C. Wood, and found to be absolutely perfect so far as external appearances went. It was only after prolonged search that even at this early stage the site of the appendicectomy could be identified with the cæcum *in situ*. This portion of the large intestine was removed and a further examination made. A longitudinal section of the bowel revealed the highly interesting fact that the inversion had taken place outside the cavity of the cæcum. The appendix was turned inside out, to be sure, but this had taken place between the mucous membrane and the muscular and serous coats of the bowel. The former had been pushed toward the lumen of the bowel, the submucosa being put upon the stretch to permit of this, and the inverted stump lay in the space thus formed.

In the second case in my service at the Methodist Episcopal Hospital a stricture at the appendiculo-cæcal orifice balked every effort to accomplish the inversion, although the stump could be made to disappear completely from sight. Even palpation with the thumb and finger does not always give positive information upon this point, I am assured. It is only fair to say that I had employed Dr. Dawbarn's method a number of times before, and had quite adopted it as a routine measure in suitable cases, before the discovery of this possible fault in its technique.

The possibility of the existence of a sufficiently large vessel in the wall of the appendix from which hemorrhage might take place suggested itself to me early in my use of Dawbarn's method, and this was verified by an experience later on in a case at the Methodist Episcopal Hospital, as follows:

A patient was admitted with well-marked symptoms of appendicitis. It was found upon opening the abdomen that the wall of the organ at its base was comparatively healthy, and that inversion of the stump after amputation could be apparently accomplished with ease. Upon the following day the patient passed about four ounces of dark fluid-blood, following a movement of the bowels, as well as several large clots. This was repeated upon three different occasions in the course of the day, and told markedly upon the patient's general condition. It finally yielded to the administration of full doses of opium. A careful examination of the lower bowel failed to identify this as the source of the hemorrhage, and it is only fair to assume that it had its origin in the inverted portion of the appendix.

Upon the basis of these experiences I have made further efforts to develop an ideal method of disposing of the appendix in a manner that shall combine safety with, as far as possible, the expeditiousness of the unphilosophical method of Dr. Edebohls and the brilliant device of Dr. Dawbarn.



A. Stump of meso-appendix. *B.* Temporary ligature upon cæcal wall. *C.* Purse-string suture. *D.* Permanent ligature at base of appendix. *E.* Bulging portion of cæcal wall where section is made with the thermo-cautery.

Starting out with the proposition that total excision of the appendix should be carried out whenever practicable, and that this should include, in addition to the removal of every possible portion of the organ, measures to prevent infection of the surroundings from contact with the contents of the interior of the cæcum and the lumen of the appendix itself, as well as provision against hemorrhage from the point of section and accurate closure of the opening in the wall of the cæcum, I have

perfected the following method. The appendix is exposed in the usual manner. The further steps of the procedure are as follows:

1. A ligature is passed through the meso-appendix and tied tightly about the base of the mesentery. The latter is then cut across and the appendix freed.

2. The appendix is grasped and drawn forward so as to put it upon the stretch. In doing this the cæcal wall surrounding its base bulges forward. A purse-string suture of silk is passed in the cæcal wall, after the manner of Dr. Dawbarn. This suture is placed upon the cæcal wall from a quarter to three-eighths of an inch from the extreme circumference of the base of the diverticulum or bulging portion of the cæcal wall, in order to insure that no portion of the appendix shall escape the subsequent excision. When the purse-string suture is completed its two free ends are given in charge of an assistant.

3. A temporary ligature is now thrown about the base of the portion which thus bulges forward and either twisted or tied in a "soft knot" (*i. e.*, the second half or bow-portion of an ordinary single bow-knot, the first half of the same being omitted). If twisted, the ligature is prevented from untwisting by being grasped with forceps.

4. A permanent ligature is made to encircle the appendix about a half-inch away from the temporary ligature just described.

5. The appendix is amputated between the ligatures and close to the cæcal wall by means of the thermo-cautery, and the stump, which is really a portion of the bulging cæcal wall, touched with the cautery to arrest any possible hemorrhage. The use of the thermo-cautery also serves to sterilize thoroughly any portion of the contents of the cæcum or appendix which may be included between the two ligatures.

6. The purse-string suture is tightened, thus drawing in close apposition the serous surfaces about the cut edges of the cæcal wall, and effectually closing the opening which represents the site from which the appendix has been excised. The provisional ligature is removed by pulling upon one of its ends, the "soft knot" untying and coming away easily, or untwisted, if this method has been employed in securing it.

The entire procedure, as described, occupies but a few moments, and in point of safety possesses advantages that cannot be claimed for either of the methods which it is designed to replace.

When I recall instances in which I have spent considerable time in fruitless efforts to invert the stump of the appendix by Dawbarn's method in cases in which the thick and stiffened wall of the organ, or the existence of narrowing at the appendiculo-cæcal orifice, or both, made difficult ready inversion, and, not infrequently, prevented it altogether, I am convinced that the average time required in carrying out total excision is but slightly, if at all, longer than that of amputation and inversion of the stump.

Where the thermo-cautery is not at hand the excision may be made with the scissors, after careful isolation of the parts, and the exposed mucous membrane cleansed and disinfected by other means. While the risks of hemorrhage from the cut surface in total excision are not great when the section is made with the scissors or knife, yet the possibility of such an occurrence should not be lost sight of. The removal of, or omission of, the temporary ligature altogether would reveal the presence of bleeding; yet, as this would risk contamination of the surroundings following the escape of fecal matter from the cæcum, I have deemed it best to insist, whenever possible, that the section be made with the thermo-cautery, and that the ligature be permitted to remain *in situ* until the purse-string suture is tightened.

HYSTERICAL MONOCULAR AMBLYOPIA COEXISTING WITH NORMAL BINOCULAR VISION.

WITH REPORTS OF TWO CASES.

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Until recent years it was assumed that the anæsthesiæ of hysteria differed in their outward manifestations in no way from the anæsthesiæ due to organic disease. It is now well known that there is a great difference in the behavior of these defects, according as to whether they are of organic or of functional origin. For instance, among the essential peculiarities of hysterical cutaneous anæsthesia may be mentioned the tendency to variability in its distribution, its boundaries enlarging and contracting, sometimes from day to day, and its intensity deepening and lightening. The possibility of transfer from one side of the body to the other in exceptional subjects is also noteworthy. The variations in the extent of the visual field is a phenomenon analogous to what occurs in the areas of common sensation.

More remarkable is the fact, which has been shown to be true of at least one class of hysterics (whether it is true of all remains to be proved), that in one sense of the word this anæsthesia is no anæsthesia at all. The hysteric really feels and hears and sees. The sensory impulses coming from the periphery are not only physiologically recorded, but are perceived by the subject and associated with other mental processes. The real defect is a psychical one—namely, the sensory images do not enter into that chain of associated ideas which constitutes the individual's personality. This fact has been confirmed by numerous observers.

Some time since I had an opportunity to demonstrate this sensory peculiarity in a patient of mine. The results obtained were in entire harmony with those recorded by Binet, Janet, and others, in France. A knowledge of their peculiarities renders more intelligible, perhaps, though they may continue difficult of complete explanation, some of the still more recent observations on the behavior of hysterical amblyopia. These observations are illustrated by the cases I am about to report, which thus may be taken as further confirmation of what has been previously observed.

It has been assumed hitherto that the tests for organic amblyopia are applicable to hysterical amblyopia. This would seem in the light of these recent experiments not to be the case, and a persistence in their use is liable to lead to grave error.

The first of the cases which were the objects of the following observations was one of hysteria in a male presenting the usual phenomena of hemianæsthesia and hemiplegia. In the grouping of the symptoms, which were classical, it was a typical case. One point worth remarking, however, was the purely psychical character of the cause, which was a mental shock or fright of what would seem to be moderate severity:

The patient was sitting in an electric street-car which was in imminent peril of colliding with the car ahead of it. The impetus of the car was so far stopped that the collision was trivial. That, however, danger was apprehended was shown by the fact that one passenger, seeing the probability of collision, jumped off the car to avoid the shock.

The patient was thrown forward partially out of his seat, so that he struck the side of the car. I should judge that this was due to the sudden checking of the impetus of the car by the brakes rather than to the collision.

I am indebted to Dr. F. G. West for the opportunity to examine the case. Dr. Edward Lane, superintendent of the Boston Lunatic Hospital, was also present at and took part in the examination. The examination, eighteen months after the accident, revealed besides the visual symptoms the following conditions: left hemiplegia (face not involved). The grasp of the left hand very feeble when eyes are open and fixed on the movements of the hand; when eyes are closed grasp of hand becomes almost *nil*. Rises from bed with great difficulty; can walk with help. Tongue protruded straight. Left hemiæsthesia and hemianalgesia, involving face. No atrophy. Paralyzed limbs not spastic. No ankle-clonus. Knee-jerks equal and normal. Hearing: right ear hears watch at six inches; left, in contact. Principal subjective symptom was pain in back of the head and down spine, which was tender. Patient very emotional; cries without sufficient cause; irritable, and during examination became violently excitable; seemed to think he was the object of a conspiracy. (It was said that a few days subsequently he had left the house and hid himself in the marshes.) At the time of the accident it is stated by him that there was a momentary loss of consciousness, followed, on coming to himself, by momentary blindness (?). Taken home and put to bed. Symptoms at this time: dull, heavy

burning pain in the back of the head, and pain in the spine; nausea without vomiting. Confined to bed for fourteen months by pain, paresis, etc.; then gradually improved. Now able to be up about four hours a day. Whole mentality has changed; formerly a person of good spirits and temper; now depressed, and as above. That the symptoms were due to hysteria is confirmed by the subsequent history.

The points to which I wish to call attention here were the peculiar characteristics of the amblyopia. The left eye was affected—that of the paralyzed side.

The vision in the right eye was good. I will say here it was not thought desirable to repeat the examination to determine the exact visual acuteness in each eye, owing to the highly excitable and other mental symptoms exhibited by the patient and the exhaustion caused by the examination. I should also have made other tests of scientific value were it not that I did not consider it desirable for the same reasons. I hoped to be able to do so later, but in this I have been disappointed. But it was easily determined that the vision in the left eye was much impaired, and presented the following apparent anomalies:

When fingers were held up before the eye (the right eye being closed) at a distance of say one foot to three feet, he (the patient) could not count them though they were seen in an indistinct way; but when moved away from him to a distance of about eight feet, he could count them, or rather he saw them multiplied; *i. e.*, there was *monocular polyopia*.[1] A candle at this same distance was seen; but not as a distinct flame, but as splashes of light. Ordinary type of a newspaper or book could not be read with the amblyopic eye at any distance. The left eye was also color-blind.

The field of vision of the left eye was retracted to the extent that at the distance of eight feet it had a diameter of from two to three feet.

There was, then, in this case *monocular amblyopia, color-blindness, retraction of the field of vision, polyopia, and a withdrawal of the fixation-point; or, rather, a retraction of the near-point and an approach of the far-point to a distance of about eight feet.*[2]

To test the genuineness of these phenomena I gave the patient a book to read, and while he was reading aloud I slipped a pencil between the sound eye and the printed page.[3] To my surprise he read the words

[1] An oculist who saw the patient stated that the largest A of Snellen's test-types was not read when held close to the eye, but was read at a distance of eight feet.

[2] There were two peculiarities in connection with the polyopia and withdrawal of the point for clearest vision worth noting. The multiplication of the objects was not always a fixed number, as would presumably be the case in monocular polyopia from physical defects of the visual apparatus (lens). That is, he did not constantly see three, four, or five objects, but stated that he saw a great many and found difficulty in counting them. A physical defect ought always to produce a definite multiplication. Unfortunately this point was not very accurately inquired into, but the patient's statement accepted. (The patient was very irritable and excitable, and the examination was conducted with difficulty.) Secondly, the fact that large A, Snellen, could be read at eight feet, but not at say one foot, cannot be explained on principles of optics. To read this at eight feet requires an accommodation of only one-half dioptric; that is, parallel rays must be converged by a lens of that amount; this type should be read at one foot. The explanation of these two phenomena must therefore be psychical and not physical.

[3] The principle of this test is as follows: in binocular vision, both eyes being normal, a pencil or a similar object held in the line of vision of one eye before a printed page does not obscure any part of the field because the letters obscured from one eye are seen by the other; but if one eye be blind, the pencil interposed in the line of vision of the sound eye must

without interruption. If hysterical blindness follows the same laws as organic blindness, this test would indicate malingering. If he could not see with his alleged amblyopic eye, any sufficiently large object placed before the good eye must necessarily obscure some of the printed words.

Before forming a decisive opinion, it was thought advisable by Dr. Lane, Dr. West, and myself to make further tests. I therefore procured a very strongly convex lens, through which it was impossible for an ordinary eye to discern objects. Giving the patient again a book to read, I slipped the lens in front of the good eye while he was reading. If the alleged blind eye was really blind, he should not be able to read under these conditions; but if this eye was not blind, and supposing he was unprepared for the test, as I have every reason to believe he was, he should have read without difficulty. As a matter of fact, he stopped reading at once, and found fault with me for preventing his seeing.

The following test was then resorted to: a lighted candle was held about eight feet from the patient. At this distance the amblyopic eye alone could not recognize the candle-flame as a distinct flame, but saw it only as splashes of light. The other eye saw the flame distinctly. Now while both eyes were open a prism was held over the amblyopic eye. The principle of this test, it will be remembered, is this: if the person has normal vision in both eyes and a prism is held before one of them, any object is seen double—diplopia; but if one eye is blind, only a single object is seen when the prism is held before the good eye.

Now when the prism was held before one of the eyes of this patient both eyes being open, not only were two candles seen, but they were seen as two distinct flames described by the patient as similar to one another. In other words, the patient saw normally with each eye when both eyes were open; but the convex lens test apparently showed that he did not see with the left eye when the good (right) eye was closed or obscured.

What conclusions are we to draw from these apparently anomalous phenomena? Are we to conclude that this patient was shamming, or that hysterical amblyopia follows different laws from that due to organic disease? Before passing upon this question, I should like to call attention to the work which has been done in the elucidation of this subject, the reports of which are, so far as I know, confined to French works.

Parinaud was the first to point out some of the remarkable peculiarities of hysterical amblyopia, which I shall later refer to, but it will be more convenient to speak first of the work of Pitres.

Pitres's first experiment was made upon an "hysteric who," he writes, "for several years had been scarcely able to distinguish light from darkness with the left eye. The test employed was that of the 'boite de Flees,' designed to detect malingerers. This apparatus, you perhaps

necessarily cover certain letters which consequently cannot be read, as the second eye is blind. The test is useful to detect malingering, but requires care in its use. A malingerer, falsely claiming to be blind in one eye and not knowing the test, reads all letters without hesitation, thinking he does so with his good eye alone.

know, is formed by a box furnished with two oculars and having the external appearance of a stereoscope. At the bottom of this box are placed two points of different colors, one at the right and the other at the left, and by an ingenious arrangement or disposition the subject sees with his right eye the point situated on the left, and *vice versa*. Suppose that a malingerer who has not been warned pretends to see with the right eye; he will say that he does not see the point that appears to him on the right; now it is precisely that point which is perceived by the left eye. But to come back to our hysteric. Hardly had she looked into the instrument than she said without hesitating: 'I see two points, one red and the other blue.' I showed no surprise. However, I observed that the deceit I suspected did not betray itself by the mistake which malingerers usually commit. Some time after that I repeated the experiment of the 'boite de Flees' upon two other hysterics, equally amblyopic on the left side. The results were the same. These patients, who did not see with the left eye alone, distinguished very clearly the two points at the bottom of the box. I asked myself then if the hysterical amaurosis was not a functional trouble existing only in monocular vision, and, proceeding upon this hypothesis, I made a certain number of experiments, of which the concurring results established my conviction.

"Here is one of the patients who served for these observations. When her left eye is closed she sees very well with the right eye. When, on the contrary, the right eye is closed, she scarcely distinguishes with the left eye light from darkness. The two eyes being open, I ask her to look at a red cross drawn in the centre of a black background. Then I place a prism before the right eye. The patient sees at once two red crosses. Place now the prism before the left eye, and the patient still declares that she sees two red crosses. According to well-known physical principles, this diplopia, induced by the interposition of the prism, can be produced only if the two retinæ are excitable. One of the two is excited, in fact, by the real image, while the other perceives the image deviated by refraction. Under the conditions in which we have just placed her our patient then used both eyes for vision.

"Let us now use the experiment with the screen. I write upon the blackboard a line of letters; a sheet of cardboard is placed vertically before the meridian-line of the face of the patient while she is seated immediately in front of the blackboard. When the right eye is closed she declares she is incapable of distinguishing the characters written upon the board. When the left eye is closed she reads with hesitation the letters written on the right screen. When both eyes are open she reads all the letters, those on the left of the screen as well as those which are on the right."

What has been shown by Pitres to be true of the perception of form has been shown by others to be true of the perception of colors. Parinaud, for example, found that if the left eye is blind for green, which it sees as gray, while the right eye is normal, and a prism is placed before the normal eye, instead of two images, one gray and the other green, being seen, both are green. He adds: "On repeating this experiment, I have observed that if the prism is placed over the abnormal eye, the two images are gray; but it is necessary for this that the ambly-

opia should not be too pronounced." This, if true, is a fact difficult to reconcile with the other phenomena. The same observer further found what may prove to be a fact of considerable practical value, that a certain number of patients who were color-blind in *both* eyes, each tested separately, could *distinguish colors in binocular vision.* Parinaud concluded as a result of his observations in hysterical amblyopia that an eye that does not see in monocular vision can see in binocular vision, although this is not true in all cases. He is disposed to attribute the failure to see to " too high a degree of amblyopia in the *second* eye, or that binocular vision did not exist or existed imperfectly before illness."

The observations of Parinaud have been confirmed by others. Charcot and Regnard made the following experiments:

A patient blind for green could see red; but if a disk colored partly red and partly green revolved, she saw it not as red, but as gray;[1] when the disk was still it was seen as red and white. Again, a red and white disk was placed by the side of the first; the patient saw them alike; but when the red and white disk was in motion the patient saw it as pale red, while the red and green disk in motion was seen as gray.

Regnard also demonstrated that an hysteric color-blind for red still has a green after-image; and Charcot observed that certain persons with hemianæsthesia and monocular color-blindness for one color see distinctly that color even with the affected eye in binocular vision. Bernheim also has confirmed Parinaud's results.

It is also stated that the re-establishment of binocular vision in these cases is not true of peripheral vision, but only of central vision, although in many cases of concentric limitation of the visual field the field enlarges 10°–70° on opening the second eye. The explanation of these curious phenomena still remains to be found. Parinaud thought they showed that there is a special mechanism for binocular vision, that in monocular vision each eye is in connection with a single hemisphere, that of the opposite side; in binocular vision, on the contrary, the two eyes are in connection with each hemisphere, which may be indifferently right or left.

Janet, while indorsing this view, would also add a psychological element of the nature of the associated sensations, for he claims that the amblyopic eye of certain subjects can see even in monocular vision, if the visual image occurs simultaneously with a strongly associated sensation of another kind, " just as the image of a caterpillar upon the arm restores the tactile sense of the [anæsthetic] arm. So the images from the sound eye may, by association, bring back into the field of consciousness the images from the amblyopic eye." That this, however, is not a complete explanation will become evident by the fact, as will

[1] Red and green mixed are normally seen as gray.

be observed in the second case here reported, that normal binocular vision may be present even when both eyes tested singly are amblyopic.

Before returning to the case just described, I will briefly refer to the other ocular symptom present., viz, relatively clear vision for objects at a fixed distance only and polyopia. Parinaud explains the former by a contracture of the muscles of accommodation. By reason of this contracture the near-point and the far point coincide, and the eye cannot accommodate for objects placed either nearer or further than that determined by the contractures. Thus a concave lens may be necessary for distance and a convex lens for near objects.

Charcot has also insisted upon the occurrence of this form of contracture in hysteria following traumatism. Parinaud claims that this contracture is often overlooked, because it is generally concealed by the amblyopia. That this is not a satisfactory explanation of the phenomenon in question, in our case at least, has already been pointed out (see foot-note, page 159). It is more probable that this phenomenon is dependent upon cerebral or psychical disturbances, and has therefore a central origin. The same may be said for reasons already given of the polyopia which quite frequently accompanies hysterical amblyopia. This has been explained by the contracture. It appears only at a certain distance, which corresponds to that fixed by the supposed contracture. Even upon this supposition the exact connection between the two is not clear. It is assumed that it is due to unequal refraction of all the segments making up the lens, and in consequence of which the image from each segment is not focussed on the same spot on the retina. Parinaud assumes, without proof, as it seems to me, that this unequal refraction is caused by the contracture of the muscle of accommodation. A central origin seems to me more likely, at least when the polyopia is a multiplication of images of an inconstant number.

Since the above notes were presented to the Boston Medico-Psychological Society I have had the opportunity to observe another case of hysterical amblyopia, which presented the phenomena of improved or normal sight with binocular vision. As this case, however, was the subject of litigation, and as one of the most important points to be determined is the possibility of deception, which has been very strongly intimated in certain quarters, this case will add nothing to what has already been noted above. As I could not absolutely exclude deception, the accuracy of the observations might be questioned. In order that the question of deception might be settled, I have been for a long time in search of a case, the *bona-fide* character of which could be accepted without question. Such a case I now present. It seems to me that the conditions under which the case was observed must carry the same conviction to others as to myself, that malingering can with perfect

safety be excluded. It is desirable that the circumstances under which the case was observed should be related.

The subject was an applicant for a position on the police-force of the city of Boston. To obtain such a position every applicant is required to pass a physical examination under the Civil Service Commissioners of the State. The examinations under the civil service rules are competitive, and involve considerable trouble and some loss of time to the applicants, who frequently give much time to a preparatory training for them. Each applicant is obliged, first, to pass a competitive educational examination; he is then examined physically to determine his soundness, and finally is obliged to compete in a physical examination in gymnastics. Those receiving the highest percentages are recommended for appointments. All this, it will be seen, involves much time and trouble on the part of the applicant, and it is plainly for his interest to pass as good an examination as possible.

It is difficult to conceive of a mentally sound person attempting to pass such an examination and then wilfully and deceitfully pretending to have poor eyesight.

It may be added that the subject presented all the appearances of being honest, and in other respects no suspicion of malingering was attached to him.

On May 9, 1896, the applicant presented himself. When I examined his vision I covered his right eye as usual with a screen, and asked him to read Snellen's test-types with the left eye. He could only read $\frac{15}{100}$. As soon as he did this he turned to me and said that he could not see well with each eye separately, but he could see perfectly if he used both eyes together. He went on to say that two or three years ago he had been rejected on account of imperfect sight by the physician making the examination, who tested each eye separately, and therefore found, as I had, defective vision in each. The patient further stated that when he was informed of his rejection he was surprised, because he always thought he had good sight. He then went to an oculist, who confirmed him in the fact that with binocular vision his sight was normal; it was only with monocular vision that his eyesight was impaired. He argued that inasmuch as he had perfect binocular vision he should be passed. It was plainly evident that it was greatly to the advantage of this patient to make out his eyesight to be as near perfect as possible, while the contrary was to his disadvantage.

After he made this statement, I continued the examination and found that the vision of the right eye alone was $\frac{15}{70}$ minus. Binocular vision was $\frac{20}{15}$, which, taking into consideration the poor light of the room, was better than normal. His visual field, tested with the finger, was apparently normal. I also made out partial color-blindness; according to my recollection, the color not recognized was green, but my notes are defective on this point and it is possible that this observation may have been erroneous (although I do not think so), inasmuch as on the second examination he matched all colors perfectly.

Later the applicant was subjected to three different examinations; on

one occasion in conjunction with Dr. J. J. Putnam and on another occasion by Dr. O. F. Wadsworth, who, as an oculist, kindly examined the case for me and has given me the results of his examination. I am thus fortunately able to add to my own observations those of two independent and competent observers—one of them an oculist. Results of the tests used at these examinations varied somewhat, but I may state here we all agreed *as to the bona-fide character of the phenomena, the existence of amblyopia when one eye was closed, and normal vision when both eyes were open.*

On May 10th, when the subject was examined by Dr. Putnam and myself, he still exhibited the same degree of amblyopia as on the previous day, when one eye was completely covered—that is:

$$\text{V. O. S.} = \tfrac{17}{100}.$$
$$\text{V. O. D.} = \tfrac{17}{70}.$$

When neither eye was covered, vision was $\frac{20}{15}$. Now, when the prism was slipped before either eye, contrary to what was expected and to the results obtained in my previous case, the *amblyopia developed at once, and diplopia was not exhibited.* Repeated tests with the prism gave the same results, which were the same irrespective of the direction of the axis of the prism; that is, whether vertical or horizontal, and irrespective of the position of the base, etc. So that it is not probable that the absence of diplopia was due to the patient involuntarily overcoming by muscular effort the effect of refraction. This seemed to show that in this case, although light entered both eyes, the amblyopia was not removed and binocular vision was not really restored. We thought this might be due to auto-suggestion, or some mental inhibition or disturbance of the visual images derived from the two eyes; this disturbance being caused simply by the presence of the glass, which suggested that the eye before which it was held was covered or its vision interfered with. To test this point, and not having a plain glass, a diaphragm was made from a piece of paper in which a hole was cut. Later an ophthalmoscope without a lens was substituted for this. The patient was made to hold the diaphragm before one eye, but to use both eyes for vision. Care was taken to make sure that the patient held the diaphragm with the hole directly in the line of vision. Under these conditions, of course, the binocular vision was not *physically* interfered with at all. Nevertheless, at first the amblyopia was not removed, the patient saying he was unable to see. Later, after the patient learned to use the diaphragm and began to appreciate that there was nothing in the apparatus that would interfere with his vision, he was able to see nearly normally; and at the next examination he reported that he had been practising with such a diaphragm at home and could now see perfectly well.

Dr. Wadsworth, also, reports that he made a similar test as follows: "Two prisms of equal magnitude were placed together so as to counteract one another and make what was equivalent to a plain glass, and then held before one eye. Under these circumstances the amblyopia still persisted, although theoretically, from an *optical point of view*, the patient should have seen as well as when he used both eyes without a glass. This experiment seemed to show that the failure to see under the conditions of the experiment was due to some sort of mental inhibition by auto-suggestion."

On the next day the patient, being examined by myself alone, the

prism-test was again applied and somewhat different results obtained. When the prism was now held before either eye the amblyopia was nearly removed. The exact degree of vision existing under these circumstances was not determined, but the patient was able to read type that he could not read if either eye was blindfolded. But now, although vision was improved by the prism sufficiently to enable him to read type that he could not read with each eye singly, nevertheless there was no double vision, and the patient insisted he saw only one object, and this irrespective of the direction of the axis of the prism, etc. But when the prism was turned around so as to change the direction of the axis and the apparent relative position of the object, the patient stated that the test-object (a piece of white paper with the letters B and A) moved as the prism was turned. This is what happens normally when the prism is similarly manipulated before one eye, the other eye being closed. Up to this time great care had been exercised not to suggest to the patient that he should see double, or that there was any such phenomenon as diplopia.

Now, as I thought that unintentionally he might have neglected one of the images, and might have concentrated his attention upon only one, he was asked whether he could not see two images, and care was taken that he should understand the nature of the test. He still asserted that he could see only one image, and that this image changed its position as the axis of the prism was turned.

(Query: Was the improvement, or the disappearance of the amblyopia on this occasion, due to suggestion from the fact that the patient had been practising at home with a diaphragm and had learned to see normally through it, in consequence of which the idea was suggested to him that the prism-test was of a similar nature? I should answer this in the affirmative. Again, did the patient really have normal *binocular* vision with the prism, one image being mentally suppressed, or was normal vision restored only to the eye which looked through the prism? The latter seems most probable, as only one object was seen even when he tried to see two, and this moved as the prism was turned.[1])

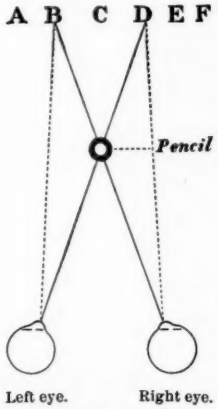
The second test was as follows: the patient was given a book to read with binocular vision; this, of course, he did perfectly. While he was reading a strong convex lens was slipped before one eye. The patient stopped reading at once, and was unable to continue; that is, amblyopia was developed at once by the obscuration of one eye, and the effect was the same as when one eye was blindfolded.

The third test was that with the screen. When this was used on two different occasions, once by Dr. Putnam and myself, binocular vision was not restored; that is, the amblyopia continued in each eye.

Dr. Wadsworth, to whom I am indebted for valuable criticisms, reports to me the following interesting results of the pencil-test obtained by him. By this test, after a primary failure, he succeeded in obtaining

[1] In either case, strictly speaking, there was only monocular vision, but in the first case the second image would be formed but excluded from consciousness; in the latter it might not be formed at all.

vision in one amblyopic eye under conditions similar to those under which the amblyopia developed; that is, while central vision was obscured in the other eye. Instead of a screen, he held a pencil directly in front of some small test-type. The patient was unable to read all the letters those that were cut off from sight by the pencil not being seen. That is, only those letters were seen which formed an image in each eye—binocular vision; when some letters were cut off from one eye the other failed to read them—monocular amblyopia. By a process of education (or suggestion?), so to speak, he succeeded in overcoming this amblyopia and producing a monocular vision. The pencil was held to one side, where it could still be seen, but where it did not obscure any letters.



First B obscured to right eye and not seen by left.
Second B obscured to right eye, but seen by left—monocular vision.

After the patient was accustomed to this it was brought in front of the type. The patient now read all the letters, although some were obscured to each eye; that is, while one eye was obscured for central vision, the other saw and the monocular amblyopia disappeared. A glance at the diagram will render this clear. (This test shows the dangers of assuming malingering because of contradictory results.)

In this experiment, although central vision was cut off, peripheral vision was not, and images of neighboring letters, A, E, F, were formed upon other parts of the retina. This may have played an important part in restoring vision to the other eye. Janet, for example, states that under similar conditions an amblyopic eye (the other eye being normal) has seen when the test-letters formed words, the adjoining letters, by association, seeming to have drawn the previously unperceived images of the amblyopic eye into the field of consciousness. So it may be that the peripheral binocular vision in this test may have induced the monocular vision (or was it suggestion?).

The field of vision tested on several occasions with the finger appeared perfectly normal. Color-perception at the second examination was normal. The patient complained that his eyes were made tired by

the examination to a degree out of all proportion to what would occur to a normal person, and that peculiar quivering of the eyelids so frequently observed in hysteria was very noticeable. There was no anæsthesia of the face or hands. The surface of the remainder of the body was not examined.[1] In all other respects the patient was a perfectly healthy individual, unconscious of any infirmity, who performed manual labor daily. I was unable to obtain any history that would throw any light on the origin of his trouble. No blue-line on his gums or other evidence of lead-poisoning. He had received a slight blow on his head a few years ago, but this at the time did not cause any noticeable disability.

It seems to me that this second case settles, if this still be necessary, the question once and for all of malingering as an explanation of the apparently paradoxical phenomena observed in hysterical amblyopia.

I may say that Dr. Putnam, Dr. Wadsworth, and myself were agreed that deception was not to be entertained in the second case just reported.

These cases may be taken as corroborative of what has been observed by such competent observers as Parinaud, Charcot, Pitres, and others on the Continent. The fact that the results obtained by each of these observers have been substantially in harmony is not to be overlooked.

The circumstances under which my first case was observed, it being one that was involved in litigation for damages, did not preclude the possibility of simulation; and the fact that the tests gave results similar to those obtained in simulated blindness from organic disease naturally suggested the theory of deception. But, on the other hand, the other phenomena observed in this case can hardly be reconciled with this theory. To maintain this view it is necessary to assume that the patient was conversant with the phenomena of monocular polyopia and the so-called contracture of the ciliary muscle(?) (a clear vision only for objects at a fixed distance), phenomena which, as yet, so far as I know, are not mentioned in English text-books in connection with hysterical amblyopia.

I am also certain that the physicians who had the case in charge, or who saw the case with me, were not familiar with these phenomena, and that therefore the subject could not unconsciously have obtained a hint from them. It should also be borne in mind that the other somatic symptoms observed in this case, such as paralysis, anæsthesia, etc., were typical of hysteria; and if the peculiar phenomena connected with the amblyopia had not been observed, one would never have thought of doubting the *bona-fide* character of the other symptoms.

The fact that hysterical amblyopia follows different laws from those of organic amblyopia is one of the highest practical importance. And it is necessary to bear this in mind in applying the ordinary tests for

[1] Further examination could not be obtained.

simulation. Tests which are applicable to organic amblyopia are useless in the hysterical form, but valuable in distinguishing organic disease from functional disease, but not in determining the actual existence of the latter.

The occurrence of binocular vision in monocular blindness in hysterics, even when there is some impairment of vision in the sound eye, explains the slight disability occasioned to such patients by this ocular defect.

RELATION OF DERMATITIS HERPETIFORMIS TO ERYTHEMA MULTIFORME AND TO PEMPHIGUS.[1]

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Considering that there has been, and that there still exists, some diversity of opinion among dermatologists regarding dermatitis herpetiformis, especially as to the cutaneous manifestations which should be included under this caption, and those that should be relegated elsewhere, a few remarks concerning the relation of this dermatosis to several well-known diseases may be made, with a view of making the subject plainer. It is not my intention to discuss the literature of the past decade, to criticise the cases that have been recorded as examples of dermatitis herpetiformis, nor to discuss the views of the reporters of such cases, beyond remarking that in some instances gross injustice has been done to this disease. It is not out of place to state here that the writer, in the light of additional clinical experience, sees no reason for changing his views as expressed in his earlier communications. Well-defined, typical cases are from time to time still presenting themselves to him as formerly. Cases with less clearly defined features are also sometimes met with, as well as occasionally cases in which it is difficult in the beginning of the attack to decide whether they should be classified with dermatitis herpetiformis or with some other disease. Such being the case, it is proper to note and label all the typical cases met with. There are enough of these to make the subject interesting and to enable us to say that they represent a special cutaneous disease—a disease *sui generis*. There exists among observers, however, but little difference of opinion concerning typical cases. These have been recognized and described in all dermatological centres, and the reports are so uniformly alike that no time need be spent here in a recapitulation of this subject.

The two diseases that bear the most likeness to dermatitis herpeti-

[1] Read before the American Dermatological Association, September 11, 1896.

formis are erythema multiforme and pemphigus. Dermatitis herpetiformis possesses clinical features common to both, but it is more closely related to erythema multiforme than to pemphigus. It also possesses features in common with herpes, in a sense that the eruption is herpetiform and also neuritic. By the term neuritic I mean that the cutaneous manifestation is obviously under the control of the nerves of the skin, as in the case of herpes simplex and herpes zoster. With the term neurotic, on the other hand, I would convey the idea that the disease of the skin was due to nerve-influence, but that this cause was not necessarily patent on the skin. Thus, alopecia areata and vitiligo are both neurotic diseases, but they do not display unmistakable signs of the cutaneous nerves being involved, and hence would not be called neuritic. Upon the herpetiform character of dermatitis herpetiformis I have always insisted. This feature is striking in all cases, and is a just reason for taking exception to the term dermatitis multiformis for this disease, as has been suggested by some observers. The term multiformis fails to convey any idea of the chief characteristic of the disease, namely, its herpetiformity. The term multiformis is general and vague, and is without special significance beyond the point that it indicates polymorphism, a feature common to certain other diseases, notably eczema. Herpetiformity, on the other hand, as stated, is eminently characteristic of this disease. Without it there can exist no dermatitis herpetiformis.

I have stated that dermatitis herpetiformis possesses features in common with erythema multiforme. Not only are both diseases strikingly polymorphic in their manifestations, but they are, moreover, allied in nature. In some cases of dermatitis herpetiformis this observation is conspicuously manifest. Many cases will be found at one period or another in their course to possess certain features common to erythema multiforme. There are instances, however, in which no resemblance to erythema multiforme occurs at any period in the course of the disease. It will be understood that erythema multiforme is employed in its broadest sense, and that it includes herpes iris. In dermatitis herpetiformis the cutaneous manifestations, it may be remarked, are in most cases more intense, more persistent, and more chronic than in erythema multiforme. The formation of pustules, especially miliary and acuminate, moreover, so common in dermatitis herpetiformis, is a feature that is wanting in erythema multiforme. In some cases the series of symptoms in dermatitis herpetiformis are such as to suggest the idea of a chronic erythema multiforme. But, even in these instances, the process will be found to be considerably more than a chronic erythema multiforme, so that even if the use of this term were sanctioned, a correct idea of the process of dermatitis herpetiformis would not be conveyed. While, therefore, some cases of dermatitis herpetiformis are allied to erythema multiforme, and simulate that disease, it would be unjust to both to regard

them as being one and the same disease. It may be remarked here that, in my experience, dermatitis herpetiformis simulates erytherma multiforme more frequently than *vice versa*. I have seen cases of undoubted dermatitis herpetiformis (as proved by the history and the subsequent course of the disease) resemble in the beginning erythema multiforme, but usually only for a short period. I have also met with rare cases in which a threatened dermatitis herpetiformis proved to be an erythema multiforme. Such experience long ago led me to the conclusion that these diseases were cognate.

The other well-known disease to which dermatitis herpetiformis bullosa is more distantly related, and to which it bears a likeness, is pemphigus, but from which it differs in important particulars. In dermatitis herpetiformis blebs occur in certain varieties. They appear especially in the bullous and in the multiform varieties. In pemphigus, it need not be said, they are constant lesions. The existence of blebs in dermatitis herpetiformis does not in itself signify a relationship to pemphigus any more than the blebs in herpes iris indicate a kinship to pemphigus. No one, I believe, at the present date holds the view that herpes iris and pemphigus are closely related; nor does anyone contend that pemphigus and herpes simplex or herpes zoster are akin. In this connection I may refer to the subject of the coexistence and the combination of morbid processes, giving rise to deviations in type and to modifications, which I believe is a much commoner occurrence than is generally considered to be the case. By admitting that morbid processes in general may coexist or combine, the numerous variations from types of diseases so constantly met with may be accounted for. Some so-called "anomalous cases" may thus be explained. The point of practical importance in all such instances is to determine the prevailing morbid process, to distinguish between essentials and accidentals, in order that therapeusis may be directed against the predominant process. I believe that dermatitis herpetiformis may in rare instances occur in combination with certain other diseases, particularly with erythema multiforme and with pemphigus; and also that it may merge or lapse into these diseases. Clinical experience seems to warrant this statement, and I can see no objection to accepting this belief. Cases of dermatitis herpetiformis sometimes occur that partake more or less distinctly of erythema multiforme, others of pemphigus; that is to say, they possess clinical features that are strongly suggestive of one or the other of these diseases, yet holding fast to the peculiar features of the type. It may be said that dermatitis herpetiformis occupies a position between erythema multiforme and pemphigus.

It will be borne in mind that dermatitis herpetiformis possesses the peculiarity of manifesting itself with varied primary lesions, and of pursuing an irregular course. Irregularity or even capriciousness in

the production of the lesions is in most cases a notable feature. They may be erythematous, papular, vesicular, pustular, bullous, or a mixture, and sometimes they all occur together. Polymorphism is usually a prominent feature, generally more so even than in eczema. On account of this peculiarity a general likeness to eczema is occasionally met with. I recall one of my earlier cases, that was under observation for a long period, the lesions being small herpetiform vesicles and pustules, occurring in patches, accompanied by intense itching, and was for a long time regarded as a multiform eczema of an unusual type. Throughout a period of several years it certainly bore more resemblance to eczema than to any other established disease of the skin. At no time was there any likeness to erythema multiforme (erythematous, vesicular, or bullous), nor to pemphigus. In dermatitis herpetiformis polymorphism is even more notable than in erythema multiforme. It is not, however, a constant feature. Occasionally cases are met with in which it does not occur, the lesions being, it may be, vesicular, pustular, or bullous throughout the attack. It is especially in relapses and recurrences that this feature is most conspicuous. In this respect the disease is altogether different from pemphigus. The evolution of the lesions, moreover, is irregular, and is peculiar. In probably no other disease is this so singular. One notable feature is that they incline to make abrupt and radical changes, as, for example, a vesicle into a pustule or bleb; and, furthermore, that vesicle, pustule, and blebs at times may appear simultaneously, and often are seated side by side. The lesions also tend markedly to vary in kind in relapses and in recurrences. This is a striking point in the course of the disease. I have referred to these characteristics because they are totally different from those which mark the symptomatology of pemphigus. One cannot conceive of a pemphigus without blebs, perfect or imperfect in formation. There are but few of the exudative diseases that are more uniform in the production of their cutaneous lesions and that are more regular in their evolution than pemphigus. The evolution of the lesions of a disease, I contend, plays an important part in the history of that disease. It constitutes an integral part of the malady, and one that must not be lost sight of. It is this characteristic that I desire to lay stress upon in differentiating dermatitis herpetiformis from pemphigus. I believe that, if in a case of bullous dermatitis herpetiformis the course of the disease be watched for a long period, polymorphism of lesions will in most every instance sooner or later manifest itself to such a degree that pemphigus must be excluded in the diagnosis. But even in cases in which the evolution of the lesions is ignored there exists in dermatitis herpetiformis more or less conspicuous herpetiform features that are wanting in pemphigus vulgaris. If, therefore, the herpetiform features, the evolution of the lesions, and the course of the disease in dermatitis herpetiformis

be kept in mind, the question of pemphigus will seldom arise in diagnosis. It is altogether unreasonable and irrational to hold, as some observers have done, that dermatitis herpetiformis bullosa is merely a pemphigus. If such observers will closely observe and follow the process of the evolution to its termination, and, further, if they would note the relapses and recurrences which so commonly take place, they would not be so likely to confound these diseases.

CONCLUSIONS. The conclusions I would arrive at, briefly expressed, are:

1. That dermatitis herpetiformis is in most instances a disease with well-defined, tolerably constant clinical features which enable it to be distinguished from other cutaneous diseases.

2. That it is in most instances more closely allied to erythema multiforme than to any other generally recognized disease.

3. That one variety, the bullous, possesses features which resemble those of pemphigus vulgaris, from which disease, however, it differs in the peculiar inflammatory and herpetiform character of the cutaneous lesions, as well as in the tendency to polymorphism, the irregular evolution of the lesions, and in its course.

A CASE OF THORACIC ANEURISM.[1]

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LIZZIE B., colored, aged thirty-five years, married, no children, was admitted to the Howard Hospital September 4, 1894, on account of a painful swelling of the left sterno-clavicular articulation. Her family history was negative, but she gave a clear history of syphilis, contracted when she was eighteen years old, and for which she was under treatment for over a year. Since then she enjoyed fairly good health until about three months previous to her admission. During this time she suffered with severe headaches and increasing dull, boring, and neuralgic pain above the left clavicle and down the left arm and at the left sterno-clavicular articulation. Here a swelling made its appearance. These symptoms became so aggravated during the week previous to her admission that she was unable to sleep, and on account of dyspnœa she could not lie down. She was of medium height, poorly nourished, and decidedly debilitated. The swelling was about the size of an English walnut, situated a little below and over the left sterno-clavicular articulation. It was painful on slight pressure and gave the impression of containing fluid, especially on the upper surface. No pulsation was at this time perceptible. Its base was hard and indurated. The overlying skin was unaltered in appearance. The positive history of syphilis,

[1] Read before the College of Physicians of Philadelphia, May 6, 1896.

together with the rapid growth, the pain and indistinct fluctuation, and the situation of the swelling, suggested gumma, and she was therefore admitted to the surgical ward. Upon the following day, however, while prepared to incise, curette, and pack in the usual way, and while speaking of the importance of making a positive differential diagnosis between aneurism and other growths in this situation, I was startled by detecting a faint impulse on the apex of the swelling, synchronous with the pulsation of the heart. There was no bruit, murmur, or thud, and, beyond the faint impulse, no sign of aneurism. Examination of the heart showed no evidence of valvular disease. The radial pulses were full, regular, and even, and not atheromatous. Enough counter-indication to incision had been found, and the patient was treated expectantly for some days. Absolute rest in bed was enjoined, with medium diet and gentle purgation. While the tumor gradually increased in size the patient's general condition seemed to improve. Her headaches and local pain became less severe, and she expressed herself as feeling well enough to go home. On September 15th, eleven days after her admission to the hospital, a plaster cast was made (Fig. 1), and the following notes of her condition were taken:

FIG. 1. FIG. 2. FIG. 3.

September 15, 1894. September 30, 1894. October 30, 1894.

Plaster-of-Paris casts in profile.

Inspection. A rounded lobular swelling, situated in the region of the left sterno-clavicular articulation, extending over the median line to the right of the manubrium. It is about the size of a lemon, and fills up the suprasternal notch. It measures two and one-half inches in breadth by three inches in length. The clavicle is slightly elevated above its plane, and the whole left side of the chest is prominent. The tumor pulsates most markedly over the main prominence, and the pulsation is

slightly expansile in character and synchronous with the heart-beat. The right external jugular vein is enlarged and pulsates, and a branch of the left jugular coursing over the tumor is also enlarged and pulsates.

Palpation. The most prominent part of the tumor is covered only by skin and fascia, the bony structures having been absorbed, and a portion of the growth may be compressed and pushed back into the crater-like opening. Feeble diastolic shock is felt over the tumor. Expansile pulsation cannot be determined. There is no thrill, but the whole præcordia pulsates. The apex-beat is very much accentuated and felt in the left anterior axillary line in the sixth interspace.

Auscultation. A faint bruit is heard immediately under the *right* sterno-clavicular articulation and not over the tumor. This bruit is accentuated on forced inspiration and disappears on forced expiration. All cardiac sounds are accentuated, and there is good closure of both mitral and aorotic valves.

Percussion. With the exception of a small spot of impaired resonance one inch in diameter, immediately to left of sternum and two inches below the apex of the swelling, the tumor-dulness merges into that of the heart. Dulness does not extend beyond the right border of the sternum, except at the manubrium. There is pain over the spine of the scapula on percussion, with general soreness over the whole of the left shoulder. There is a good pulmonary resonance right and left posteriorly, but the respiratory sounds are weak on the left side; no râles.

The urine was examined and found normal.

It became evident that we were dealing with a saccular aneurism, arising probably from the ascending or transverse portion of the arch of the aorta, with erosion through the left sterno-clavicular articulation and a portion of the manubrium, and that it had developed in such a manner as not to involve the vagus or recurrent laryngeal nerves.

The absence of many of the physical signs of aneurism, which continued to be a marked feature of this case, made it one of unusual interest. The pupils were equal, and responded normally to light. Dr. E. L. Vansant kindly made a laryngological examination and reported the larynx and vocal cords normal. Digestion seemed undisturbed, and there were no gastric symptoms. There was no thrill, and the expansile nature of the pulsation was not well marked. The bruit heard over the second right costal cartilage could not be referred to the sac of the aneurism, since it could not be heard over the tumor. The rapidity of growth, and the danger of rupture indicated by the thinness of the tissues over the most prominent portion of the tumor, brought up the question of operative procedure. The advisability of electrolysis with a watch-spring was considered, but was abandoned as a *dernier ressort.*

The following treatment was ordered: absolute rest in bed; potassium iodide grains 5 three times daily; venesection, six or eight ounces every three days; low diet. The patient was not bled for two days, during which time severe pain in the shoulder and left arm developed. On the third day, September 18th, she was bled eight ounces from the external saphenous vein at the ankle, with great relief of this distressing symptom. Between September 18th and 30th she was bled four times, chiefly for the relief of pain, and each time with marked success. On the 30th, fifteen days later, a second cast (Fig. 2) was made, and the following note of her condition was taken:

Tumor: since last examination the tumor has equally enlarged. It has extended upward on the neck, and there is now a well-defined sulcus separating it into parts. The right external jugular vein is dilated and larger than when first examined. The tumor is the seat of distinct heaving, in which the thoracic wall shares. This heaving is synchronous with systole and is more marked with expiration.

Palpation. Expansile pulsation is quite evident. The diastolic shock is better felt than at previous examinations. There is no thrill. Pulsation greatly increased during forced inspiration.

Auscultation. At point of contact of first rib with the right edge of sternum there is during quiet breathing a harsh and rather long systolic murmur, which is inaudible during forced, held inspiration and expiration. This murmur is probably not aneurismal, but might be due to pressure on the pulmonary artery. No murmur is heard in either carotid.

Percussion. Tumor gives dulness. Below the tumor there is resonance in the left second interspace; third rib, flatness; third interspace, dulness extending to the fifth rib, through which gastric tympany may be obtained.

Heart. Apex-beat visible in sixth interspace, and the point of maximum intensity is one inch to the right of the anterior axillary line, extending in the interspace for a distance of three inches. It is diffuse, regular, and unaccompanied by thrill.

Right border of heart-dulness corresponds to right border of sternum; left border corresponds to a line drawn just without the anterior axillary line.

Auscultation of apex. First sound is long, but not so muscular as one would expect from size of heart. There is no murmur.

The second sound is well heard in the tricuspid and aortic regions, and is obscure in character. No murmur is heard in these regions other than that described under head of tumor.

Auscultation at angle of the left scapular gives loud heart-sounds, but otherwise is negative. Respiratory murmur over right base posteriorly is well heard. Over left base the breath-sounds are weak and feeble, and when a forced inspiration is taken numerous liquid râles are heard. The respiratory murmur of left side is weaker than on the right side. The left lung seems to be compressed posteriorly and downward.

It was now evident that the aneurism was steadily increasing in size, and the prognosis became very grave. The tissues overlying the tumor were so thin that rupture seemed imminent. The sulcus across the apex of the swelling was probably due to a part of the sterno-clavicular ligament which had not been absorbed. Full doses of potassium iodide with mercurial inunctions were ordered with liquid diet, bleeding as necessary for pain, and absolute rest in bed.

In ten days she was taking fifty grains of potassium iodide, and one drachm of mercurial ointment was rubbed in over abdomen, chest, and arms daily. A marvellous change took place. The tumor steadily decreased in size, and the patient's general condition improved daily. Once she became slightly salivated, and the mercurial was omitted for a few days. It was also found necessary to reduce the iodide to twenty-five grains daily on account of an acne. When she left the hospital, one month after this treatment had been started, a third cast was made,

which clearly shows the very marked diminution in the size of the tumor. (Fig. 3.) Two weeks later, November 15, 1894, Dr. Judson Daland kindly assisted me in making the following notes of her physical condition:

Upon inspection it is found that the tumor has diminished about two-thirds in size, and the impulse is correspondingly decreased. The appearance of the superior portion of the chest in front is also materially altered, the most prominent point at present being situated immediately below the left sterno-clavicular articulation, which is sacculated, feeling like an exostosis from the manubrium, and is not painful to pressure. Immediately below this bony prominence a distinct pulsation may be felt, very like the apex-beat of a heart unaccompanied by thrill. The area would be described by a circle having a diameter of half an inch. The entire upper portion of the sternum is still bowed outward. At a point corresponding to the right edge of the sternum, on a level with the first and second ribs, a faint pulsation is felt, which becomes stronger as the mid-sternal region is approached, and is strongest in the fourth interspace, half an inch to the left of the left border of the sternum. Over this region a diastolic as well as a systolic shock can be felt, synchronous with the heart's action, but no thrill. It can be felt outward as far as the left mid-clavicular line. The apex-beat is diffused, violent, strong, and is felt in the seventh interspace in the anterior axillary line. The beat feels as though the heart struck the finger directly, and there is no thrill.

Percussion. A limited area of pulsation, immediately below the prominence and downward for a distance of one and a half inches, is flat, below which there is no impairment of the percussion-note for half an inch, and then comes normal sternal resonance. The right half of the manubrium is dull on percussion. In the left sterno-clavicular region there is marked dulness extending down to the second rib, at which point there is a small area of resonance. Below that there is a flatness extending down to the fifth rib. This whole area is within the left mid-clavicular line. There is resonance to the right of the sternum, excepting in the manubrial region, where normal pulmonary resonance is not met until the parasternal line is reached. In the ensiform region there is impaired resonance continuous with the dulness immediately to the left. The lower limit of this area is marked by the seventh rib.

Above the clavicle and sternum the tumor bulges into the left side of the suprasternal notch, lying under the sternal tendon of the left sterno-cleido-mastoid. It bulges slightly over the level of the clavicle and sternum. By pressing the finger in this region back toward the cervical vertebræ one feels a ledge for a distance of one full inch, which is without pulsation, painful to pressure, and feels hard.

Auscultation. In the first interspace at the right edge of the sternum the heart-sounds are heard with great distinctness. On long inspiration there is a distinct systolic murmur audible. In quiet breathing certain of the heart-beats are entirely without a murmur, and the murmur is best heard at the beginning of the expiration.

Directly over the swelling a blowing murmur is heard with systole during inspiration, but during expiration the heart-sounds are clear. This is the first time any murmur was heard over the swelling, and it is doubtless of aneurismal origin. The second sound is rather sharp. Over the pulmonic cartilage the second sound is accentuated and somewhat

ringing; no murmur. The heart-sounds are better heard below the manubrium, and at the ensiform both first and second sounds are heard equally well, the second sound being especially accentuated, but no murmur is audible.

The above examinations were all made in the standing posture.

When sitting, auscultation over the aortic cartilage reveals rather feeble heart-sounds and a faint systolic murmur. Over the swelling a distinct blowing, rather harsh systolic murmur is audible, coincident with each systole of the heart. The second sound is heard immediately thereafter, and is clear over the pulmonic cartilage. The systolic murmur at the aortic cartilage has a slightly higher pitch than that over the swelling. As the stethoscope is carried downward on the left to the third interspace near the sternum the systolic murmur is best heard. Over the apex-beat no distinct systolic murmur is audible, but there is a grating sound like that produced in hearts that are hypertrophied or dilated. Over the third interspace, in the left parasternal line, there is a distinct blowing, wavy, systolic murmur, differing markedly in quality and intensity from that heard over the swelling. There is no murmur in the carotids.

From these auscultatory signs it would appear that the systolic murmur heard over the swelling is of aneurismal origin because of location, quality, and want of distribution of the carotids. Further, the systolic murmur of different quality heard in the third interspace in the left parasternal line, having a wavy character, is probably due to compression of the pulmonary artery, as the tricuspid and mitral areas are free from murmur. The origin of the murmur heard at the aortic cartilage is doubtful. In the scapular region, near the inferior angle, a distinct systolic murmur is audible. In the axillary region no murmur is audible.

There is no difference in the radial pulses as regards rhythm or volume. The left is rather deeply situated and is hard to feel. The right is more superficial and is markedly thickened.

After leaving the hospital the patient led a quiet life, and took bichloride of mercury, one-twenty-fourth of a grain, and potassium iodide, gr. xx, three times daily.

This treatment was faithfully followed, with no marked change in her general condition or in the size of the swelling during the winter and spring and early summer of 1894. In August, however, thinking that she was cured, she gave up treatment, and October 15, 1895, she returned to the hospital for relief of distressing symptoms.

The swelling had increased considerably in size, and was very painful. She suffered much with headache, pain in left shoulder and arm, aggravated dyspepsia, a metallic, barking cough, and on two occasions during paroxysms of coughing she brought up a mouthful of bloody expectoration. At this time no marked changes were noted in the physical signs. She would not consent to remain in the hospital, so she was placed upon the old mixture of bichloride of mercury, one-twenty-fourth of a grain, and potassium iodide, gr. xx, three times daily.

She improved slightly under treatment until November 16th, when she was again admitted to the ward, suffering intense pain over left side of neck and left shoulder, radiating down the arm. The tumor was about the size of a small lemon, rounded, somewhat sacculated, firm, and tense, giving expansile pulsation, and painful on firm pressure.

She was bled on the 17th, 21st, and 28th, eight ounces each time, with marked relief of pain. At the same time one drachm of mercurial ointment was rubbed in the abdomen, arms, and legs, and she was given sixty grains of potassium iodide daily.

The tumor increased in size, and on December 4, 1895, her condition was as follows: the tumor is a rounded, globular swelling about the size of an orange, measuring three and one-fourth inches in all directions over its surface. It bulges above the clavicle, which is raised above its plane, and it fills up the suprasternal and supraclavicular fossæ. It is less firm and tense than at last examination and gives expansile pulsation.

The left shoulder droops, and there are general pain and tenderness on pressure.

The area of flatness may be described by a line drawn from the middle of the left clavicle to the fifth rib just above the nipple, from here horizontally to the mid-sternal line, then to the base of the tumor, and around it to the right sterno-clavicular articulation. Below the tumor this flatness merges into cardiac dulness, which extends to the left anterior axillary line as far as the seventh rib. Here the apex-beat can be seen and felt strongly pulsating. The first sound is long and muscular, unaccompanied by murmur. A decided bruit can be heard all over the area of the tumor-flatness, and there is faint diastolic shock. A short medium-pitched systolic murmur is heard to the right of the sternum at the second costal cartilage. This murmur is transmitted into the right carotid. The second sound is sharp and accentuated.

Bronchial breathing with rough, moist râles is heard under the outer half of left clavicle down to third rib. Posteriorly there is general broncho-vesicular breathing with moist râles on left side.

On right side posteriorly and anteriorly the breath-sounds are more pronounced, somewhat rough, but unaccompanied by râles.

Conclusion: a large saccular aneurism, its upper portion having eroded the bony structure. The left lung is compressed posteriorly and laterally, and the heart is pushed down and out. The aneurism probably arises from the ascending or transverse portion of the arch.

The patient improved steadily under treatment, and on December 24th was discharged in a comfortable condition. The tumor became firm and slightly smaller. The pain had ceased in the neck, arm, and shoulder.

In spite of warning she undertook housework, and January 15, 1896, she again returned to the hospital on account of pain. At this time another plaster cast was made. (Fig. 4.) She improved under treatment, and left the hospital at the end of ten days. She then reported weekly, and continued to do well until April 7th at 4 A.M., when she suddenly developed agonizing pain under the left axilla, which increased in severity during the day, requiring one and a quarter grains of morphine with atropine for relief. There were nausea and vomiting with painful cough. The breathing was labored and rapid. Temperature was normal. Pulse 112. Respiration 36. The physical signs could not be differentiated owing to the loud breathing. I suspected an acute pleurisy or else a sudden dissection of the arterial walls involved in the aneurism and consequent increase in the size of the tumor. The chief pain was situated in the *right* axillary region. She was bled twelve ounces, and morphine and atropine were given

subcutaneously for relief of pain, and the next day, April 8th, she was again sent to the hospital, and the following notes were made of her condition:

April 8, 1896. Breathing stertorous, labored, frequent, averaging 26, and frequently interrupted by a loud ringing cough. Tumor over upper portion of sternum is the size of large orange and is more than a hemisphere. During cough it becomes tenser and larger. Impossible to judge of cyanosis. Matrix of nails is normal. In sitting position with the head bent downward the chin rests upon the tumor. There is marked pulsation, which upon palpation feels like the heart. The diastolic shock is marked. Expansile pulsation is well felt. The wall of the sac is made up of skin, fascia, and connective tissue, and has an apparent thickness of a quarter-inch. The thickest portion is in the centre. Anteriorly there is no thrill.

FIG. 4.

Plaster cast made January 17, 1896.

Auscultation. Over central portion of tumor is a strong, low-pitched, systolic murmur mixed with the cardiac first sound. Second sound accentuated. A systolic murmur of different quality and of higher pitch is heard below the tumor to left of sternum. A murmur is heard in the left carotid. No aortic diastolic murmur is here audible. At ensiform there is a murmurish sound of diastolic time. The apex is plainly felt as low as sixth rib outside of nipple-line, occupying an area of two inches in diameter. It is forceful, and indicates that the

heart is closely applied to chest. No thrill, no murmur, but the muscular element of the sound is increased.

Pupils symmetrically contracted, *probably due to morphine.* Pulses irregular in time, and the right pulse much smaller in volume than the left. At times the pulses are synchronous and again are not synchronous.

Lungs. Impaired resonance over both bases. The air enters both lower lobes with the same degree of power. The breath-sound is harsh, unaccompanied by râles, and there are no friction-râles. Occasionally a large rhonchus is heard apparently from a compressed trachea or one of its branches. A prolonged, loud, harsh murmur is heard midway between the border of the scapula and the spinous process of the vertebra on the *right* side, and extends from the fifth to the twelfth dorsal vertebral spines. During quiet breathing but little air enters either base.

FIG. 5.

Photograph taken April 11, 1893.
Note the collar of flesh, the drooping shoulder, and the forward position of the clavicle.

Over the left scapulary region there are signs of compressed lung, and the heart-sounds are plainly audible. Dr. A. W. Watson kindly made a laryngological examination and reported that he found the vocal cords normal. There is a slight deviation of the trachea to the right.

Treatment ordered: mercurial inunctions and iodide of potassium.

Two days later, April 10th, she was bled six ounces, for pain, at 8 A.M.

At 1 P.M. on the same day a violent attack of dyspnœa came on very suddenly, with sharp pain in right axillary region. The patient was deeply cyanosed, and she seemed about to die of asphyxia. A vein was

immediately opened and twenty-eight ounces of blood drawn. During the bleeding the cyanosis disappeared, breathing became easy, and pain subsided. The tumor, which had been firm and unyielding, became flaccid, and patient rested easily. Later in the afternoon she slept for two hours. On the following day, April 11, 1896, the photographs were taken. (Figs. 5 and 6.)

May 12th. The patient has steadily improved under treatment, and, in spite of frequent venesections for the relief of slight attacks of dyspnœa and pain, she is gaining strength. She is now able to be out of bed and walk about the ward for a few hours daily. The inunctions were pushed to salivation and then stopped. The potassium iodide has been gradually diminished until, on the 5th of May, she was taking none at all. At this time a tonic pill of iron, quinine, and strychnine was ordered. Her appetite is good, bowels regular, and all functions normal.

FIG. 6.

Photograph taken April 11, 1896.

The wall of the sac seems to be firm and elastic, and about from one-half to one-quarter of an inch in thickness. The walls seem to be of uniform thickness. There is no point of marked thinning indicating danger of rupture externally.

The sac has not changed in size or appearance, but the walls have become firmer and thicker under treatment. Frequent examinations of the urine have been made during the progress of the case with negative results.

The aneurism is undoubtedly a large one, and the fact that such extensive erosion has taken place, allowing protrusion of so large a part of it, accounts in some measure for the absence of many pressure-symptoms, and, therefore, absence of pain. Pepper (*American Text-book of*

the Theory and Practice of Medicine) cites two cases illustrating this point—one in which an aneurism of the ascending arch had eroded the sternum, appearing externally as a large tumor, and finally rupturing externally without having caused any decided subjective symptoms excepting dyspnœa; another in which the tumor had reached such a size as to cause dulness over a large part of the thorax to the right of the sternum without causing pain.

The question of the location of the aneurism is interesting. An aneurism of the ascending arch causes erosion to the right of the sternum. In this case the erosion is of the left sterno-clavicular articulation and contiguous structures. The physical signs show that the larger part of the sac is within the thorax and to the left of the sternum. The fact that so many pressure-symptoms have been and remain absent argues against the view that it is an aneurism of the transverse arch, because, owing to the small space between the sternum and the spinal column, tumors in this region usually give rise to severe pain and other symptoms of pressure. One would expect an aneurism of the descending arch to develop posteriorly.

Occasionally small aneurismal dilatations of the sinuses of Valsalva have been noted, and Bramwell has reported one case in which a large aneurism had its origin at this point.

Gray thus describes the sinuses of Valsalva: "Between the semilunar valves and the commencement of the pulmonary artery are two pouches or dilatations, one behind each valve. These are the pulmonary sinuses (*sinuses of Valsalva*). Similar sinuses exist between the semilunar valves and the commencement of the aorta; they are larger than the pulmonary sinuses. The pulmonary valves are situated behind the junction of the left third rib with the sternum."

It has occurred to the writer that this aneurism may arise from one of the pulmonary sinuses of Valsalva. This might account for many of the peculiar features of this case, namely, the development of the sac anteriorly and to the left of the sternum; the fact that the sac fills up a large portion of the upper half of the left thorax; the absence of involvement of the vagus and recurrent laryngeal and of the sympathetic nerves; the peculiar and unusual murmurs; the absence of irregular and asynchronous action of the radial pulses; the absence of tracheal tugging.

An aneurism in this situation, unless markedly sacculated and the aneurismal opening from the vessel very small, would give rise to violent attacks of dyspnœa. This has always been a marked feature of the case, and especially so during the last few months. It is fair to presume that the opening into the sac has increased materially in size in this time.

The writer does not mean to urge this view of the case. It is mentioned only as being worthy of consideration. It seems more probable

that the aneurism arises from the left lateral wall of the ascending arch, and has developed anteriorly and to the left, a portion of its upper part also bulging into the right pleural cavity just below the right sterno-clavicular articulation and to the right of the manubrium. Also, that the opening from the aorta into the sac was at first very small, accounting for the fact that for a long time no aneurismal bruit was heard, and that the bruit which became audible later was due to increase in the size of the opening, allowing a stronger current of blood to enter the sac. This theory is borne out by the murmur which, in the pulmonary area, was noted November 15, 1895, and which was heard most distinctly while the patient was in the sitting position, slightly bent forward, causing pressure by the sac upon the pulmonary artery.

The question of the probable origin of the aneurism is now, however, of minor importance in comparison with the actual condition of its walls and the size of the opening into the vessel from which it springs. Upon the solution of these questions should depend our decision as to the propriety of attempting to obtain coagulation of blood and the deposit of the white, laminated fibrin upon the walls of the sac by means of Macewen's method. One or more strong needles are used in this method to pierce the sac, in order to scratch and irritate the inner walls as much as possible. These needles may be allowed to remain in from one to four or five hours, or they may be withdrawn immediately. Macewen reports consolidation and cure in two cases (*Lancet*, November 22, 1890), one an aneurism of the thoracic aorta and the other of the subclavian. He also reports another case of femoral aneurism, in which the autopsy showed that the deposition of the white, laminated fibrin was greatest where the sac-irritation had been most thoroughly applied.

Weir and Page (*New York Medical Journal*, May 7, 1892) report an aneurism of the ascending aorta treated without success by this method. The needling was done three times during the first week of treatment, and as no improvement took place it was not tried again. The patient died from rupture of the sac about two months later. The autopsy showed an aneurism measuring 6½ by 8 inches and filled with a post-mortem clot. The walls were very thin and the rupture had taken place posteriorly. Nowhere was there to be seen more than a trace of fibrinous deposit and no evidences of the needling were visible.

The method is a rational one, however, and has been successful in the hands of its originator and in a few other cases. It seems to me that it is applicable only under certain conditions, and these are a thick-walled sac, a sac in which there is only a moderate amount of expansile movement, and especially and only when the opening from the vessel is small. In order to determine the latter point in the present case arrangements have been made to have a radiograph taken of the thorax. There is a chance of gaining important information by this

means, especially if there are calcareous deposits and atheromatous changes in the walls of the aorta or of the sac. In addition a radiograph will show the changes which have taken place in the bony structures by reason of erosion and internal pressure. The writer proposes to make a supplementary report based upon this picture should it prove successful.

One word in regard to treatment. That which has been carrried out in this case has proved so successful that some hesitation is felt in making any change.

A short time ago it was thought advisable to stop the mercury and the potassium iodide on account of intolerance. Since then the patient has been taking only a tonic pill of iron, quinine, and strychnine. It is proposed before returning to the mercury and iodide to try the effect of calcium iodide in full doses. This remedy has recently been used with apparent success in these cases. The result will be reported at some future time.

The points of unusual interest in the case which has been related are as follows:

1. The length of time during which the aneurism has been known to exist It has been two years since the first symptoms appeared, and the patient has during the greater part of the time been able to be about on her feet, doing light work.

2. The almost entire absence of the usual pressure-symptoms. There has been no evidence of involvement of the vagus or recurrent laryngeal nerves or of the sympathetic nerve. Occasionally there has been pain radiating over the left shoulder and down the left arm, showing that the cervical plexus has been involved.

3. The remarkable result of the therapeutic measures, as shown by the decided decrease in the size of the tumor and the repair of the eroded bony structures at one time during the progress of the case. This point alone is sufficient to make the case worthy of record, and one which may be called unique in the history of thoracic aneurisms.

4. The decided benefit gained from venesection. On one occasion at least the patient's life was undoubtedly saved by the prompt opening of a vein and the withdrawal of twenty-eight ounces of blood.

5. The question of the origin of the aneurism.

I desire to express my thanks to Dr. A. W. Booth, to whom I am indebted for the plaster models from which Figs. 1, 2, and 3 were made; also to Dr. Keffer for the model of Fig. 4. Dr. H. C. Williams, resident physician, has rendered valuable assistance in many ways, and I take this opportunity to express my appreciation of his work.

REVIEWS.

A Practical Treatise on Medical Diagnosis for Students and Physicians. By John H. Musser, M.D., Assistant Professor of Clinical Medicine in the University of Pennsylvania, Physician to the Philadelphia and the Presbyterian Hospitals, etc. Second edition, revised and enlarged. Illustrated with 177 woodcuts and 11 colored plates. Philadelphia and New York: Lea Brothers & Co., 1896.

Two years ago the writer, in reviewing Musser's *Diagnosis* in this Journal, bespoke for it a cordial reception from the professional public. The prediction has come true. The evidence is the exhaustion of the first edition and the publication of a second within a little over two years.

This second edition shows careful revision. Not only have typographical errors been corrected, but there is much additional matter in the text, and several new illustrations have been added, so that the volume is larger than the former one by fifty pages.

We would speak with especial commendation of the alterations in the illustrations. Several new ones have been added that are of great value; *e. g.*, the diagrams under the head of Diseases of the Heart. Inferior cuts have been replaced by superior ones, as is seen in the illustrations of the emphysematous and phthisical chests. And several of the time-honored and shopworn illustrations of tube-casts and urinary deposits have been withdrawn, and in their places we see fresh, clear original cuts. If we were disposed to criticise, we should say that Musser has been less fortunate in his representation of the blood in various diseases. The cut from Rieder, on page 736, gives but an imperfect idea of the plasmodium, and the plate opposite page 812 is scarcely more successful. The plasmodium can best be studied in the fresh specimen, and a figure representing it in this state would be better than either of those we have mentioned. The figures from Golgi (page 815) are, to our mind, much truer to nature, though perhaps a trifle diagrammatic. We have seen no representations of the plasmodium that compare for purposes of study or of teaching to those in Thayer and Hewetson's monograph. The description of the plasmodium given by Musser in the text is, perhaps, a little too meagre. The plate representing leukæmic blood (p. 744) would be improved, we think, had a better field been selected. We admit that we often see many such fields even in carefully prepared specimens. But for a text-book illustration one is justified in picking out a place where all forms are clearly distinct—*i. e.*, a typical place. In the figure in Musser the running together of the red corpuscles gives one the impression of a poorly prepared microscopic specimen.

As was said in the review of the first edition, we regard as of the highest value the general introductory chapters and the chapters introductory to the study of the diseases of the various organs. Too often the physician, in his haste to get at the individual disease, skips the introduction. He who does that with Musser's work misses much that is valuable and fails to obtain that broad, general view of the subject that it is the evident desire of the author we should obtain. As bearing directly upon this point and containing much of truth, we quote from the preface:

"Diagnosis, being a practical art, should be held to include not merely the recognition of a disease or a complication of diseases, but also a determination of the *health-value* of the patient. Thus in a case of pneumonia not only should the presence of the malady be established, but the functional condition of all the organs should also be investigated, in order that the rational treatment may be prescribed and a rational prognosis given. In other words, the physician should never forget that a patient is a unit, comprising closely interacting organs, and that the response to treatment will be satisfactory in proportion to its adaptation to the condition of the entire organism."

"Success in treatment follows only upon diagnosis of the most comprehensive character, and, furthermore, the *status præsens* should be clear to the physician, not only at the outset, but also at every stage of the disease."

He who reads Musser aright will, we believe, get this broad conception of disease, will see the connection between "closely interacting organs," and will be enabled to make the comprehensive diagnosis that leads to rational treatment.

The work is fully up to date in matters of bacteriological, chemical, and microscopical diagnosis. But it is to be remembered that Musser's book embraces as well the facts of physical diagnosis—inspection, percussion, auscultation, etc.—and that the value of the subjective history is clearly set forth. It combines, therefore, the merits of works devoted solely to chemical and microscopical diagnosis, those dealing mainly with physical diagnosis, and those laying chief stress upon the subjective history. It was a difficult task to effect such a combination. That Musser has succeeded will be generally admitted, as the success of his first edition attests.

In reading the book we have marked several places as worthy of special commendation. We note as particularly vivid word-pictures the description of the actions of the healthy baby as compared with those of the rickety child, or the sufferer from meningitis (p. 58); the description of the typhoid state (p. 109) and of internal hemorrhage (p. 182); the complete and systematic exposition of hæmoptysis (p. 302).

His explanation of the subject of the reaction of degeneration is clear and easily comprehended by the student (p. 842). We fully agree that the sphygmograph is an instrument whose value depends upon the personal experience and skill of the physician employing it (p. 396).

We suppose every reviewer feels that he has not done his duty unless he hunts carefully and succeeds in finding some little statement that is incorrect, or at least one on which he may "beg the gentleman's leave to differ." So we would suggest that our author has left us a little in the dark as to whether he expects us to make diagnoses of capillary

bronchitis and of broncho-pneumonia, distinguishing them as two pathological and clinical entities (pp. 308 and 325). While the statement is certainly true that a diastolic murmur can generally be set down as organic, there are, we believe, occasionally met with, diastolic murmurs that are not organic (p. 386). The statement that the capillary pulse is a "sign of aortic insufficiency" (p. 390) is a little misleading, as it appears to mean that the finding of a capillary pulse means aortic regurgitation. Frequently a capillary pulse may be seen in conditions other than this particular valvular lesion.

But these are trivial matters. The book as a whole and in its details is of superior merit. It has come to stay, and is destined, if the author will constantly keep it abreast of the times, to go through many subsequent editions. J. B. H.

MEDICAL JURISPRUDENCE FORENSIC MEDICINE, AND TOXICOLOGY. By R. A. WITTHAUS, A.M., M.D., and T. C. BECKER, A.B., LL.B., with the assistance of many collaborators. Volume IV. 8vo., 860 pages and indexes. New York: Wm. Wood & Co., 1896.

THIS is the concluding volume of the most comprehensive work on legal medicine yet issued under American auspices. In this age of "Systems" it is not surprising that a topic so largely scientific and comprising the border-line between law and medicine should be treated in a comprehensive manner. The work, as a whole, has exhibited the advantages and defects of the method. When many specialists contribute, there will be apt to be inequality in the literary and scientific execution of the various articles. All who are successful or eminent in a particular field are not necessarily capable of communicating their knowledge clearly and elegantly. It is presumed to be the function of the editor to supply the finishing touches, but he, too frequently, neglects this drudgery. Nor is it certain that, even under the best editing, the selection of collaborators will be made with an eye single to the interests of the work. Personal feeling will always have some sway, and hence most of these encyclopædic contributions to science have a predominance of contributors local to the editor's field of labor.

In the volume under review these general criticisms are not germane, for it is entirely the work of the senior editor of the System. The reputation of Dr. Witthaus is a sufficient guarantee of his ability to deal properly with the topic to which the volume is entirely devoted. He unites a large experience as a toxicologist with thorough familiarity with general chemistry, both as a teacher and writer, and we turn over the pages of the book with the assurance that the expert will find it a valuable guide.

The books open with a historical essay in which is given some interesting information concerning the celebrated poisoners of antiquity, though, of course, a large part of these stories is subject to the uncertainties that belong to all accounts of the marvellous or startling. In the chapter devoted to General Considerations we note some statistics of poisoning as recorded in New York City, from which it appears that illuminating-gas has become of late years one of the most frequent causes of accidental and suicidal poisoning. This is probably due to

the substitution of water-gas for the old-fashioned coal-gas, the latter having much less toxic power.

The portion of the book devoted to discussions of definitions and limitations of toxicology, to the manner of action of poisons, treatment, diagnosis, methods and indications of autopsy are all comprehensive and excellent, and we need not review them in detail. In describing the methods of conducting the scientific investigation for the detection of any poison, Dr. Witthaus enters into some details concerning which we are partly in agreement and partly not. He observes that the analysis should be made by a chemist of experience, who is also a graduate of medicine. We may accept this as a safe rule, but the latter qualification is often not regarded as essential. We cannot, however, agree with the next statement, namely, that the analysis is best made by one expert, and that the joint investigation by two analysts is to be disapproved. It is possible that such arrangements may, at times, lead to delay and even to unpleasant differences of opinion; but we think that in view of the unseemly contests between opposing experts in important trials a great advantage is gained by having two competent witnesses to the analytic results or pathologic conditions. This is especially true when the tests or observations must be given by description only. In many cases of poisoning a portion of the material which has been administered may be reserved by the expert and submitted to the court for further tests, if need be; but in many other cases no such tangible evidence can be brought forward; the tests are mere color-changes which must be described from notes, or, if shown at all, it must be by the use of material not obtained from the body examined. In this class of cases, it seems to us, great advantage will result if the concordant observation of two competent persons is available. Another contingency that may arise is the inability of an expert to testify, by which proper trial may be impossible. In one case of which we know, an expert was too sick to be present at the trial; fortunately another analyst had been joined in the investigation and assisted at it throughout, and the trial went on satisfactorily. In another case the expert who conducted an investigation died suddenly before the trial took place, and it was impossible to pursue the prosecution.

Elaborate descriptions are given for the extraction of organic poisons. The liability of standard, and presumably pure, reagents to contain poisonous bodies shows us one of the pitfalls of this line of work and leads us to regard with doubt many of the earlier investigations in this field. As a striking example of this source of error, we may quote from a recent paper by Vaughan and Perkins, who state that a sample of ether, which was intended for analytic use, contained so much of a poisonous impurity that the residue from fifty cubic centimetres killed a guinea-pig in ten minutes.

The question as to which is the most important poison may be considered answered by the fact that 184 pages (more than one-fifth of the book) are devoted to consideration of arsenical compounds. In discussing the lethal dose of ordinary arsenic (arsenious oxide), Dr. Witthaus rejects the case reported by Dr. Castle, upon the authority of which most toxicologists have fixed the minimum lethal dose for an adult at 0.13 gramme (2 grains). He considers that a recently produced abortion had much to do with the death of this patient.

We regret to note that no space is given to the consideration of

chronic lead-poisoning. It is passed over with the allusion that it is industrial and not forensic, but the topic has generally been included in treatises on toxicology proper, and certainly the analytic methods, which are difficult and important, should be described. The detection of lead in cases of acute poisoning is easy, but the minute amounts of lead encountered in cases of chronic poisoning require special methods, and we would have been glad to have had them discussed by a competent authority. The liability of lead-compounds to occur in small amounts in food, either by accident or adulteration, makes the topic one of more than industrial importance.

Perhaps the most interesting part of the book is the discussion of the analytic questions that arose in the Buchanan case. Dr. Witthaus was the principal witness for the prosecution, and it was in this trial that the lawyer-doctor, O'Sullivan, shot, meteor-like, across the forensic sky. The value of Dr. Witthaus's color-tests for morphine was combated by Dr. Vaughan, who contended that the same reactions could be obtained from putrefactive products, especially those resulting from decomposition out of contact with air. We need not enter at length into the details. Dr. Witthaus quotes liberally from the official report, claiming, and we think rightly, that the "imitations" that Dr. Vaughan obtained before the jury by applying the various morphine-tests to indol were not such as to invalidate the value of these tests when properly applied. Yet Dr. Vaughan, in the recent edition of his work on *Ptomaïns*, referring to this case, asserts broadly "that all of the tests obtained by the experts were duplicated with putrefactive products." We agree with Dr. Witthaus that this statement is disingenuous.

There is no doubt, however, that the color-tests for alkaloids must be conducted with precision and with constant regard to the possible fallacies from ptomaïnes, and it is also clear that for a time, at least, such testimony as that given by Dr. Vaughan in the Buchanan trial will imperil the evidence given by the prosecution. With mineral poisons some portion of the substance may be recovered from the test-liquids and shown in a tangible form, but the tests for alkaloidal poisons are mostly "swan-songs"; that is, the poison is destroyed in giving evidence of its presence, and all that can be brought before a jury is the description of color and forms, with the possibility of dispute as to the exact observations.

The book will be of good service to toxicologists and will, among other advantages, serve to give uniformity to analytic methods. The literary style is excellent. The new spelling, of which Dr. Witthaus was an early champion, is used *in excelsis*—namely, sulfur, sulfid, iodin, iodid, etc.

The original sources have been consulted in many instances, with the result that more than one case which has been doing duty in toxicologic literature has lost its value.

The general typography is good, as regards the text proper; but the foot-notes, which are very numerous, are not so satisfactory. The index is rather scanty. Few illustrations are given, and most of them could have been omitted. The pictures of mercury and arsenious oxide deposits (pp. 494–95), morphine crystals (p. 724), and strychnine (p. 781), are mere smudges which can be of no benefit to a tyro and no use to an expert. In fact, drawings of crystals, that can be readily obtained for actual observation, seem to us to be a waste of money and labor.

The proper function of illustration in a work of this character is to give accurate drawings of objects that cannot be readily obtained or prepared. H. L.

PTOMAÏNS, LEUCOMAÏNS, TOXINS AND ANTITOXINS; OR THE CHEMICAL FACTORS IN THE CAUSATION OF DISEASE. By VICTOR C. VAUGHAN, Ph.D., M.D., Professor of Hygiene and Physiological Chemistry in the University of Michigan and Director of the Hygienic Laboratory; and FREDERICK G. NOVY, Sc.D., M.D., Junior Professor of Hygiene and Physiological Chemistry in the University of Michigan. Third edition, revised and enlarged. 8vo., pp. 604. Philadelphia and New York: Lea Brothers & Co., 1896.

PROBABLY no department of pathology has a more living interest to the practitioner of medicine at the present time than that which has to do with the various intoxications of the body and with the structural and functional disturbances directly resultant therefrom. With the growth of our knowledge of the bacteria and of their relations to disease, evidence has continually accumulated to the effect that their principal action upon the tissues is due to certain poisonous substances (toxins) elaborated in the course of their growth, and there is even now much to support the view that the specific peculiarities of the lesions of the various infectious processes depend chiefly upon the individual peculiarities of the poisons concerned.

Again, recent researches into the etiology of many of the lesser maladies which clinicians have been wont to class as "minor ailments," attributable in many instances to digestive disorder, are in reality dependent upon intoxication of the system by various toxic principles elaborated in the course of alimentary putrefaction or as the result of imperfect nutritional metabolism. In this category may now be classed many of the temporary causes of indisposition so frequently confronting the general practitioner, such as headache, malaise, nervous hyperexcitability, neurasthenia, etc.; conditions often slight in themselves, but of much real moment as incapacitating the sufferer for the full performance of his work.

It is with the various poisons responsible for these conditions that the book before us deals, and in it we have the most exhaustive as well as the most recent presentation of the subject with which we are acquainted. That the importance of the subject and the manner of its treatment by Vaughan and Novy are appreciated is attested by the fact that the work is now in its third edition.

After the usual preliminary chapters introductory to the subject-matter of the work, which include among other things a careful historical sketch of the growth of our knowledge of the bacterial poisons in general, we are introduced to an account of the poisonous principles which have been found in various articles of food and which have from time to time given rise to cases of serious and often fatal poisoning. Here we find described the effects produced by the eating of poisonous mussels, oysters, eels, fish, sausage, meats, cheese, milk, ice-cream, bread, etc., and are given an insight into the nature of the poisons concerned

in their production. In the chapter which follows, and which is new in the present edition, is given a brief statement of the most approved method of detecting the poisons in suspected foodstuffs.

In the four succeeding chapters, which occupy nearly one-fourth of the book, we have a detailed statement of the relation of the bacterial poisons to infectious diseases, in the course of which each disease is separately treated and the present status of our knowledge of its toxins is recounted. Here, too, we find a statement of the principles of immunity, of antitoxins and serum-therapy, as well as some account of the general germicidal power of the blood-serum and of those of its constituents to which this power is attributable. These chapters are of great interest in view of the rapid progress which has recently been made in our understanding of these most important subjects.

To the chemist and toxicologist the five chapters which follow are of especial interest, since they detail the methods of extracting ptomaïns, toxins, and leucomaïns from mixtures of organic substances and present their various chemical reactions. To the close similarity as regards chemical reactions of some of the bacterial products and a number of the alkaloid poisons a special chapter is devoted.

The work closes with a short discussion of some of the "autogenous diseases," by which are meant those diseased conditions induced by poisonous substances produced within the body by its own cells in the course of their metabolism. Here we find a statement of the poisonous effects of pepton, albumoses, "peptotoxin," and of the various members of the uric acid and creatin groups of leucomaïns.

While it is impossible within the compass of a review more than to outline the scope of a work like that before us, it is hoped that enough has been said to show the vital interest of the subject treated and to indicate the manner of its presentation.

An exhaustive bibliography and a carefully prepared index materially increase the usefulness of the book. J. S. E.

A Text-book of Histology, Descriptive and Practical. For the Use of Students. By Arthur Clarkson, M.B., C.M. Edin., formerly Demonstrator of Physiology in Owen's College, Manchester; late Demonstrator of Physiology in the Yorkshire College, Leeds. Pp. 554. With 174 colored illustrations. Philadelphia: W. B. Saunders, 1896.

In the preface of the book before us the author states that his purpose "in this work has been to furnish the student of Histology, in one volume, with both the descriptive and practical parts of the science."

With the scope of the book thus clearly outlined we are somewhat restricted in the range of our criticism, for it would be an act of great injustice to the author to condemn his book because it does not meet the requirements of the specialist, when it has been designed expressly for the student whose needs are widely different. It behooves us, therefore, first to ascertain the needs of the student, and then to determine in what manner the author has acquitted himself of his task.

A book adapted to the understanding of one about to enter upon a

course of scientific study should, above all else, be clear and concise, with explicit directions regarding technical matters, and without lengthy discussion of complex problems or polemical subjects.

After a careful perusal of Mr. Clarkson's book we are reluctantly forced to the conclusion that it does not meet all of these requirements.

Chapters I. and II. are devoted to the consideration of matter pertaining to the preparation of tissue for microscopic study. Formulas for many of the hardening, decalcifying, injecting, and staining solutions in general use are given, but the directions as to their manner of employment are vague and incomplete. We feel quite confident that a student having no other guide than Mr. Clarkson would soon become involved in difficulties that could have been prevented by a few well-worded sentences.

To illustrate our remark we have space for but a single example. On page 13 the author mentions the methods for hardening tissue in saturated watery and alcoholic solutions of corrosive sublimate.

In the use of such solutions precipitation of the corrosive sublimate is quite likely to happen, and if the precipitate be not removed, the sections will be valueless for microscopic study, and yet the author has given no directions to this end.

The animal cell, the blood, and the lymph and chyle are treated of in Chapter III. The most important part of this chapter, that treating of the blood, is a lamentable failure.

The author's labored efforts to give a brief and concise description of this important tissue are painfully manifest. He seems to lack the complete knowledge of the arts of selection and condensation which is essential to the construction of a successful work of this kind. Nowhere throughout the book is this fault so evident as in the description of the origin of the red blood-corpuscles and the primary blood-vessels.

The conclusions at which we arrive from Mr. Clarkson's description are that the red blood-corpuscles are epithelial cells derived primarily from epithelial cells of the mesoblast, and that the cells forming the lining of the bloodvessels and the walls of the capillaries are also epithelial cells derived from mesoblastic elements indistinguishable from those that give birth to the red blood-corpuscles.

This placing of the red blood-corpuscles among the epithelial cells is new to us and somewhat startling, as we had always considered them as belonging to the category of connective-tissue cells.

In Chapter IV. we find described as "simple squamous epithelium" the cells covering the free surfaces of serous membranes and lining the heart, the bloodvessels, and the lymphatic vessels. At the present time many eminent pathologists regard these cells as a form of connective tissue, and they no longer refer to them as epithelium, but as endothelium.

Epithelium and connective tissue differ from one another in many essential features; indeed, they represent two distinct types of tissue, and throughout life each retains it own distinctive characteristics. In his excellent text-book on *General Pathology* E. Ziegler states clearly and succinctly the principle of an almost universally accepted doctrine, which we take the liberty to quote: "Every tissue capable of growth furnishes formative cells only for tissue like or closely allied to it."

Thiersch, Baumgarten, Raab, Thoma, and others have conclusively

proved that frequently in the process of repair the endothelial cells proliferate, and the resulting cells often produce connective tissue.

Were Mr. Clarkson's view the correct one, it would be impossible to reconcile this fact with the above-mentioned doctrine.

The author essays a description of the origin of the lymphatic vessels and glands in Chapter VIII., but is so confusing in his treatment of this interesting matter that we doubt if he clearly understands it. The remaining chapters are somewhat better than those to which we have called particular attention, but not one is wholly free from objectionable features.

Where Mr. Clarkson treads old and well-beaten paths he does fairly well, but where he attempts a little excursion into new and less familiar fields he becomes confused and wanders in an aimless fashion. We do not hesitate to say that he has failed to give us a book that we could recommend to the student, particularly the medical student. With the latter the study of histology must be considered as subsidiary to that of pathology, and, if he were to become well grounded in the principles of histology as set forth by Mr. Clarkson, he would have much to unlearn before he could appreciate the cell-changes involved in many of the morbid processes.

The illustrations, of which there are many, form the most pleasing feature of the book; the coloring is excellent and the drawing accurate, and our chief regret in closing this review is that we cannot bestow the same praise upon the text. D. B.

VORLESUNGEN ÜBER DEN BAU DER NERVÖSEN CENTRALORGANE DES MENSCHEN UND DER THIERE. By DR. LUDWIG EDINGER, Professor in Frankfurt-am-Main. Fifth enlarged edition. Leipzig: F. C. W. Vogel, 1896.

LECTURES ON THE STRUCTURE OF THE CENTRAL NERVOUS SYSTEM IN MAN, ETC. By DR. LUDWIG EDINGER.

THE fifth edition of Edinger's work is about twice the size of the fourth, and contains 113 new figures, of which 99 are devoted to the section on Comparative Anatomy. The book is divided into three parts: the first is an introduction to the anatomy of the central nervous system, the second treats of the development and comparative anatomy of the brain of the vertebrata, and the third gives us the special anatomy of the encephalon of the mammalia, dealing especially with that of man.

We find much that is new, even in those portions which are taken from the former edition. One can but admire the restless energy of the author which drives him to present to the reading public a new edition of his book every two or three years.

Edinger is still conservative in his views regarding the presence of connective tissue within the central nervous system; the septa, however, which radiate toward the periphery of the cord consist of neuroglia.

We notice with pleasure the tribute paid to the scientific work of our countryman, Hodge.

The axis-cylinder of a nerve-fibre is supposed to be composed of

separate fibrils, and the achromatin of the cell-body is not structureless. Recent investigations have shown that it contains fine fibrils, which enter and leave the cell-body through its processes. We have here a new element to study in the morbid cellular changes. Great importance is attributed to the condition of the nucleus in degenerative processes, for restoration of the cell is possible so long as the nucleus is unaltered.

Edinger speaks of the vast number of sensory fibres which are found in all parts of the body—in the liver, kidneys, lungs, etc.—and which are necessary for the unrecognized reflexes on which life itself depends. An interesting example is given in the inability of a person to swallow after cocaine has been applied to the pharynx. Probably many motor disturbances of hysteria are due to this cause. We may refer in this connection to the experiments of Mott and Sherrington. These investigators, by cutting the posterior roots in the monkey, produced paralysis of the limbs.

The section devoted to microscopic comparative anatomy is worthy of careful study. This is a field which has not been thoroughly tilled. From the study of the lower forms much has been revealed in the higher. In many of the lower vertebrates the spinal cord is very large and is more independent of the higher centres than in man. The cranial nerves also may be enormous; we refer to Edinger's Figure 38 as an illustration of this fact. Special portions of the central nervous system have developed to a high degree in certain animals as need has arisen, and it is precisely this fact which renders the study of the lower vertebrates valuable. Parts which are atrophied or imperfect in man are seen in great perfection in some of the lower forms, as, for example, the olfactory centres or the optic lobes. The nucleus of the vagus in the fish forms a lobe, probably because this nerve is distributed to the external surface of the body like any sensory spinal nerve. The nuclei of the trigeminus and acusticus are also of large size. The oblongata is the vital portion in the lower vertebrates, for removal of all nervous tissue anterior or posterior to this does not cause death, although destruction of the oblongata itself is fatal. The cranial nerves in the vertebrates have an astonishing regularity in the arrangement of their nuclei, but the fibres which arise from these are differently combined, and afford even yet a subject of much study for the anatomist. The vermis attains a great development in those animals which are remarkable for their powers of swimming or flying, and it is probable that the cerebellum is concerned with the preservation of equilibrium and of the muscular tonus. The histology of the cerebellum is nearly the same in all animals. The small size of this organ in creeping animals indicates that it has some connection with locomotion. The lower olives have been found only in the mammalia as distinct bodies in connection with cerebellar fibres.

The third section of the book embraces most of what has formed the bulk of former editions. Edinger tells us that the degree of development of the brain as a whole is not an index of the intelligence of the individual. A man is prominent on account of the abnormal development of some one quality, and such a peculiarity may well be associated with greater development of a corresponding portion of the brain, while the entire mass may not be greater than in less highly favored individuals. A curious observation has been made by Perls and confirmed

by Edinger. Hydrocephalus of moderate degree, which has developed early in youth and not progressed, and rhachitis seem to favor the growth of the brain by lessening the resistance. There were distinct evidences of rhachitis in Rubinstein's cranium, and Cuvier, who had a very heavy brain, had had hydrocephalus in his youth. It does not follow that all men who have become prominent on account of mental qualities have been hydrocephalic, and that hydrocephalus in every case is productive of genius.

It is well to remember the statement which Edinger repeats, namely, that irritation of any part of the cerebral cortex may cause epileptic convulsions.

The writer admits the existence of the fronto-occipital tract connecting the occipital with the frontal lobe, as described by Dejerine, Rietz, and v. Monakow. He modifies his former statements in regard to the fibres surrounding the ventricles. The callosal fibres envelop the posterior horn as the forceps major; the forceps minor is that portion of these fibres which is situated on the outer side of the inferior horn and passes to the temporal lobe. The median side of the posterior and inferior horns contains the tapetum, which is not an essential part of the callosum, but probably the caudal end of the fronto-occipital bundle. It is not impossible that callosal fibres are mingled with those of the tapetum.

Although Edinger adopts the modern view in regard to the termination of the median fillet within the thalamus, he does not make clear the relation of this to the Haubenstrahlung (tegmental radiation). In one place he says this bundle ends in the thalamus, while in another portion of the book he states, in accordance with his former teaching, that the tegmental radiation passes toward the cord.

The "silent areas" of the brain are the associative centres (Flechsig). Fibres of the corona radiata do not arise in all portions of the cerebral cortex.

Edinger still speaks of the occipito-temporo-pontine tract, although in describing the crusta he refers to the temporo-pontine tract, making no mention of its occipital origin.

Pain following apoplexy, as has been shown by the writer in two cases, may be due to irritation of the sensory tract.

More attention is paid to the cerebellar peduncles than in former editions, and we are told that the anterior peduncles are indirectly connected with the parietal lobes.

We cannot share Edinger's opinion when he says so positively that tactile fibres are not found within the posterior columns. The case of syringomyelia reported by Dercum and Spiller must be explained, if this statement of Edinger is correct. Destruction of one posterior horn throughout the cervical region with loss of thermal and partial loss of pain-sense and with preservation of tactile sense in the arm is a condition rarely seen, and one which may not be disregarded. It is well known that Charcot, Gowers, and others have located tactile fibres within the posterior columns. We turn the last page of the book with regret, looking forward with eagerness to the early appearance of a sixth edition.

W. G. S.

MANUAL OF MIDWIFERY FOR THE USE OF STUDENTS AND PRACTITIONERS. By W. E. FOTHERGILL, M.A., B.S.C., M.B., C.M. With double colored plate and sixty-nine illustrations in the text. Pp. 484. New York and London: Macmillan & Co., 1896.

THIS manual is one of the productions of the Edinburgh school of obstetrics. Its author is a prize scholar of the University of Edinburgh, and recently House Physician to the Simpson Memorial Hospital. The work of Hart, Webster, Murray, and Barbour has been utilized in the preparation of this book; it is, then, a representative manual of one of the first schools of obstetric science.

The book opens with a description of the reproductive organs and of their functions. The development of the ovisac is given in accordance with Foulis's teaching, which traces the origin of the *membrana granulosa* to the connective-tissue corpuscle of the ovarian stroma. Fertilization is supposed to occur in both the tube and the uterus. The older and accepted views as to the most frequent time of conception are given. It is held that menstruation can occur only during the first two months of pregnancy, before the fusion of the decidual membranes renders this impossible. The diagnostic signs of pregnancy, the differences between primigravidæ and multigravidæ, and the differential diagnosis of pregnancy are clearly stated, and made more impressive by tabulated comparison. A double-page plate of colored illustrations, showing the growth of the early ovum, is also given. Our knowledge concerning the manner in which the ovum obtains nourishment is summarized for the three different periods of development through which the ovum progressively passes. The *liquor amnii* is said to be derived from the maternal blood through both the maternal and fœtal vessels. The spirals of the umbilical cord are thought to be due to the tendency to spiral growth seen in animal and vegetable organisms. Under the title of a "Simple View of the Placenta," the after-birth and cord are held to be composed of the same elements—bloodvessels, low connective tissue, and fœtal epithelium. It is stated that the fœtal portion of the placenta is simply the flattened and branched termination of the cord.

In treating of the fœtus attention is called to the fact that the principal excretion of urea is performed by the placenta, which should be recalled to mind in studying certain affections of the mother. In twin pregnancy binovular twins result from the development of two ova and are physiological. Each fœtus has a distinct amnion and placenta, the sex of the children being usually different. Uniovular twins are considered pathological, resulting from the development of a single ovum, and are frequently the subject of malformation. The duration of gestation is thought to vary with the length of the menstrual cycle, and so great is the variation in pregnancy that it is considered useless to spend much trouble in calculating the probable date of labor. In estimating the length of the fœtus, it is thought to be practically the same as the distance from the fundus of the uterus to the pubis. In attempting to assign a cause for the occurrence of labor recourse is had to the principle of natural selection. Heredity has gradually brought about the establishment of habitual gestation at ten menstrual cycles, which thus becomes typical of the human race. The hygiene of pregnancy

is not fully considered, and no further attention is paid to the examination of the urine than to advise that it should be tested for albumin during the later months. The pathology of pregnancy is treated at length, and in the treatment of syphilis importance is ascribed to keeping the blood alkaline by giving potassium chlorate to the end of pregnancy. Nausea and vomiting of pregnancy are briefly considered, and without especial reference to the importance of displacement of the uterus or the value of dilatation of the cervix. Albuminuria is not considered the cause of eclampsia, but albuminuria results from the diseases which in some cases produce eclamptic seizures. The examination of the urine seems to have been for albumin only, without reference to the estimation of solids or urea.

Extra-uterine pregnancy is considered in accordance with the views of Webster and Hart, and treatment is limited to surgical interference. In treating of abortion the value of the tampon is recognized, and the importance of thorough emptying of the uterus is enjoined. The douche curette is mentioned only in a foot-note.

Labors are classified as "natural," "preternatural," and "complicated," a distinction which is not evident. The mechanism of labor is carefully given, the old nomenclature of four positions for each presentation being retained. Rotation of the presenting part results from the action of the posterior segment of the pelvic floor. An interesting section on the "Anatomy of Labor" embraces illustrations, from various sources, of frozen sections. The illustrations are well selected and of value. In discussing the separation of the placenta but little weight is given to the formation of a blood-clot between the placenta and the wall of the womb. The after-birth is thought to be separated by loosening of the placental site, and to be expelled from the patient's body by detrusion.

In speaking of the management of normal labor it is not considered necessary to measure the pelvis of every patient, but only those not obviously well-grown and of pelvic conformation. This seems scarcely in keeping with the thoroughness of other portions of the book. Turpentine is recommended as an antiseptic for cleaning the hands, advice which seems hardly needful in view of the success of the bichloride method or the permanganate and oxalic acid.

No preliminary douche is required for the healthy patient, but the practice of strict cleanliness is enjoined. During the second stage of labor the rupture of the membranes is justifiable to hasten birth, a recommendation which seems scarcely adapted to all cases. Posterior rotation of the occiput is best treated by maintaining flexion and allowing the labor, if possible, to terminate spontaneously. Attention is called to the fact that extending the legs relaxes the skin and fascia of the perineum, and thus tends to lessen the danger of laceration. Immediate repair of the perineum may be made while the placenta is still within the uterus, before the third stage of labor has taken place. Ergot should not be given after labor as a routine prescription. It is advised, however, where tendency to hemorrhage is present. If the conduct of labor has been clean, it is better, on the whole, to omit all douching after delivery.

It is not thought that chloroform can be proved to increase the tendency to post-partum bleeding. In giving this anæsthetic the respiration and pupils should be carefully watched. The pulse may be neglected, if this is done. After delivery the direction is to apply a warm diaper

and the binder. It is not stated that the diaper is antiseptic, and the impression is given that an antiseptic dressing over the vulva is not necessary after labor.

Under the head of "Morbid Labor" are included defective pains, abnormal conditions of the genital tract, and abnormalities in the fœtus. Contracted pelves are embraced in this section, and the value of Walcher's position is emphasized, with the use of forceps. Symphysiotomy may succeed with a conjugate of two and one-half inches. From our experience we should not like to rely upon symphysiotomy in this degree of pelvic contraction. In generally contracted pelvis the obstetrician is warned against delivery by breech presentation. Under the head of "Preternatural Labor" are included pelvic presentations, transverse presentations, and those of the hands and feet and head and foot. The exact meaning of the term "preternatural" in this connection is not apparent in this book.

Complex labor is that complicated by hemorrhage from placenta prævia, separation of the placenta, or retained and adherent placenta.

Where there is little dilatation of the cervix and accidental hemorrhage is present, abdominal section is considered the only proper treatment. We presume that the author would perform hysterectomy, securing the vessels by ligature in such a case. The treatment of postpartum hemorrhage and especially the value of hot douches are clearly given. The author has not escaped the belief of his countrymen that iron may be used as a styptic within the uterus. He considers, however, such treatment to be rare. It should be entirely abandoned as irrational and dangerous. The value of saline transfusion is fully recognized.

In considering rupture of the perineum episiotomy is advised as a preventive, and suture with chromicized catgut, the stitches not passing through the skin, is thought the best method of repair.

Various forms of eclampsia are described, and toxæmia is hinted at as the cause, although this is not definitely stated. Chloroform, morphine, venesection, pilocarpin, and the steam-bath are advised. In cases commencing before labor the uterus should be emptied at once.

The term "apnœa neonatorum" replaces asphyxia neonatorum. The reason of this variation in nomenclature is not apparent. The various methods most successfully used in this condition are given.

In dealing with obstetric operations preference is given to extraction by the forceps, and this operation is described in minute detail. Axis-traction instruments only should be used. When the head is brought upon the pelvic floor it should be entirely delivered by the traction-rods, and not by relinquishing these and grasping the handles of the forceps. It is claimed that a far more successful and skilful delivery is thus effected. The forceps is indicated in flat pelves in place of version, even though the blades must be applied over the face and occiput. Walcher's position is again recommended, and wisely so, the legs of the patient being let down while the head is at the brim of the pelvis, then raised when it reaches the outlet and lowered again when the head is upon the perineum. An excellent illustration of a patient in this position, taken from a photograph, is appended. Delivery by forceps is illustrated with the patient in the lateral position, although it is stated that the lithotomy position has many advantages. Symphysiotomy is briefly mentioned, and its range is stated as probably in pelves with true conjugate between two and one-half and three and one-quarter inches. We doubt its value

below eight cm., or three and one-eighth inches, in true conjugate. The after-treatment of symphysiotomy is dismissed with a couple of sentences. In treating of induced labor the operation should be rapidly completed by the use of Barnes's and de Ribes's bags. If necessary, Hegar's dilators should begin the labor. The child should be incubated.

In treating of the Cæsarean operation Sänger's is preferred. The author evidently is not familiar with the intrapelvic treatment of the stump after hysterectomy for impossible labor, for he writes that a great advance will have been made if it is found, after a sufficient number of experiments, that the stump may safely be dropped back into the peritoneal cavity as after ordinary abdominal hysterectomy.

In treating of the puerperal state no mention is made of antiseptic precautions in the care of the breasts. The nipples must be kept dry when not in use, but the necessity for avoiding septic infection is not made apparent. The patient may leave her bed in ten days and lie upon a couch, and the use of antiseptic douches may be permitted if the nurse secures perfect cleanliness of instruments and vessels.

Puerperal septicæmia is briefly considered, and we are surprised to notice that details of treatment for this affection are considered of so little importance that they are printed in foot-notes. It is considered dangerous to scrape the endometrium and apply strong solutions of phenol or corrosive sublimate, and total hysterectomy is given as a course which is now securing favorable results. It is certainly true that scraping the interior of the puerperal uterus and applying strong antiseptics is a most dangerous practice, but there are other and better methods of cleansing the cavity of the uterus which render hysterectomy advisable in rare cases only.

The care of the infant is concisely stated, but infant-feeding is very imperfectly described, and it is stated that milk may be exposed to a high temperature from thirty to forty minutes to advantage. The value of Pasteurization does not seem to be appreciated by the author.

This manual, however, is well worthy of the brilliant school of obstetrics whose teaching it embodies. In many respects it is a most admirable book, containing a great amount of modern scientific information, clearly, concisely, and logically stated. While we may differ with the author in some points, we have enjoyed and admired his manual and can heartily commend it to others. E. P. D.

Short Contributions to Aural Surgery. By Sir William B. Dalby, F.R.C.S., M.B. (Cantab.), Consulting Aural Surgeon to St. George's Hospital, London. Third edition. London: J. & A. Churchill, 1896.

This brochure consists of articles on various otological subjects that have appeared in the *Lancet* and *British Medical Journal* between 1875 and 1896. All are good; all are very conservative. It will repay any physician, whether interested in a general or special practice, to read these nineteen essays, as they are clearly written and entirely free from technical wording. We cannot single out any one or two articles as especially good, for fear of detracting from others. We can advise most heartily a careful reading of them all. The entire set are embraced in 140 well-leaded, large-typed octavo pages. C. H. B.

PROGRESS

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THERAPEUTICS.

UNDER THE CHARGE OF

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Intestinal Antisepsis.—DR. HEINRICH STEIN closes a scholarly paper with an enumeration of the various agents by which intestinal antisepsis can be obtained. The first remedy for evacuating the intestinal contents to be mentioned is calomel, which is, by interaction with sodium chloride, converted into corrosive sublimate. For this purpose small and repeatedly frequent doses are recommended. In abnormal acidity precipitated calcium carbonate (one grain for a dose, two and one-half drachms per day) or magnesia (ninety grains per day) has an antiseptic action. Creosote, one or two drops several times daily; guaiacol, one and one-half grains for a dose; and resorcin in 5 per cent. solution in water or brandy, forty-five[?] grains daily, are useful. These are only slightly absorbed, and in that respect their action is shorter; but, on the other hand, they may act after absorption on distant areas, so that both facts should be borne in mind in prescribing. Valuable antiseptics are menthol (one and one-half grains twice or thrice daily); naphtalin (one and one-half to seven and one-half grains for a dose; seventy-five grains per day); and, finally, thymol (one and one-half grains several times daily in alcoholic solution); the last is an excellent antiparasitic (anchylostomum). Since absorption limits the action of the drug in the intestine, various antiseptics have been prescribed with insoluble substances; salol (to two drachms per day); parachlorsalol, kresolsalol, beta-naphtolsalol or betol (the last slightly poisonous). These are broken up in the intestine, partly by the pancreatic juice and partly by the unformed intestinal ferments, into salicylic acid and kresol or naphtol. Harmless and otherwise proper substances to be used for similar purposes are benzonaphtol, ammonium sulpho-ichthyolate (to thirty grains daily), and salophen (to two drachms per day); also the esters of guaiacol. These last are first decomposed in the intestine and may give rise to a successive antiseptic action. Guaiacol benzoate—salicylate, cinnamate, carbonate (one to two grains for a dose, several times repeated). The absolutely insoluble antimicrobic remedies can be

given in much larger doses; such are phenol-bismuth (fifteen to forty-five grains per day for this and the rest); kresol-bismuth, chlorophenol-bismuth, bismuth salicylate, zinc salicylate, and trioxymethylen (paraformaldehyd). Doubtless the most effective treatment of affections of the large intestine, especially of the bacterial, is by way of the rectum. Naturally the possibility of ulceration of the intestinal wall must be considered. For irrigation, solutions in sterilized water of salicylic acid (one to two parts *per mille*); silver nitrate (0.2 to 0.5 *per mille*); boric acid (0.5 per cent.); creolin (0.01 to 0.02 per cent.); and tannin (2 to 5 per cent.) may be used. Applications of an insoluble antiseptic powder, as the various bismuth-preparations, may be used during the irrigations. The results of antiseptic intestinal medication are satisfactory, but on account of the difficulties not altogether thorough. These, however, are common to all internal antiseptics.—*Centralblatt für die Gesammte Therapie*, 1896, Heft vi. S. 321.

A Case of Electric Shock.—Dr. John T. Gilbride reports an instance of recovery from a shock of two thousand volts. Twenty minutes after the accident the patient was unconscious, suffering from cerebrospinal convulsions, with legs and arms flexed, considerable jactitation, reflexes markedly increased, skin warm and dry, breathing accelerated, pulse one hundred and forty per minute, and pupils normal. Twenty grains of chloral were given by the mouth and repeated every ten minutes with but little effect until sixty grains had been taken. The convulsions almost disappeared, and he rested more quietly. One fluidounce of whiskey was now given as a heart-stimulant. The axillary temperature was 97.4° F., the respiration 20, and the pulse 100 per minute, full and strong. After twenty minutes he showed considerable violence and had a number of convulsions. After twenty grains of chloral he rested quietly and was in good condition, regaining consciousness five hours later. He now complained of being weak, of hoarseness and stiffness of the muscles, and of considerable headache. He had no recollection of occurrences for six hours before the accident. There was no vomiting nor involuntary discharges, and the only lesions were a burn of the third degree from contact with the wire and two abrasions of the scalp.—*University Medical Magazine*, 1896, No. 9, p. 724.

The Treatment of Syphilis and Gonorrhœa.—Dr. J. F. Larrien presents the second edition of his pamphlet of forty-three pages. He uses Vienna paste for the initial lesion and makes daily mercurial inunctions over the enlarged glands. For internal medication three to five drops of tincture of iodine in a half-glass of sweetened water are given each morning for twenty days while fasting. After ten days of rest this course may be repeated. For the secondary manifestations: (1) Each morning the patient receives fifteen minutes before breakfast in pure or sweetened water three drops of tincture of iodine and a half-ounce of a solution of crystallized sodium iodide in distilled water (one to fifteen), and this is to be continued during five to eight months from fifteen to twenty days each month, the remaining days being free from medication. The treatment is to be discontinued only when two months have elapsed since the appearance of all secondary manifestations. In severe cases it will be well to prescribe a

new series of three or four courses of iodine for from two to six months after the first. (2) Each day gentle inunction is made on the cutaneous syphilides with a 10 per cent. solution of white precipitate in starch glycerite. (3) For *plaques muqueuses* of the bucco-pharynx gargles of zinc chloride in water (one to five hundred) are used; or cauterization may be effected by silver nitrate or acid mecuric nitrate. In place of these may be used a gargle five to eight times daily of equal parts of hot water containing resorcin, 4 to 8; and glycerin, 50, in distilled water, 200. Of course, the usual hygienic rules must be followed.

The author also presents a method of treating gonorrhœa. At the outset there should be the ordinarily enforced avoidance of stimulating foods and beverages, replacing alcoholic drinks with Vichy, Selters, or pure water, with possible addition of a very small quantity of wine. Injections are ordered, warm, of glycerin which has been saturated when hot with boric acid (about 20 per cent.), with addition of cocaine hydrochlorate, morphine hydrochlorate, or laudanum, if there is pain, in the proportion of 0.5 to 2, 1 to 3, or 2 to 5 (according to the substance employed) to 200 parts of the vehicle. The best substance for relieving pain and reducing congestion is the cocaine. The injections are made after urination, from two to five times daily. Patients of the herpetic diathesis and those suffering from rebellious digestive disturbances receive respectively five drops of Fowler's solution every morning while fasting and five grains of salol in capsules or in hot soup at the two principal meals. During the acute stage these injections are continued, and in addition six capsules of eucalyptol or turpentine are given with each meal. During the decline of the disease the foregoing treatment is continued, and in addition Fowler's solution is added if there is tendency to chronicity or exacerbations.—Paris, 1896.

Vegetable Dyspepsia.—Dr. W. A. Walker notes that vegetable foods have a tendency to fermentation when the salivary ferments are deficient in quality or quantity, and this gives rise to flatulence, heartburn, eructations, and other disagreeable symptoms, to say nothing of resultant irritations which lead to permanent impairment of the mucous coats of the stomach and intestine. This condition—dyspepsia—leads to a state of mental depression highly favorable to the production of various forms of neurotic disease. For this indigestion we have an infallible remedy in diastase. This has not been received with deserved favor, because of the prevalence of the theory, now controverted by facts, that this is destroyed soon after reaching the stomach. At least thirty minutes after the completion of the ordinary meal elapse before gastric acidity reaches such a point that diastatic digestion ceases. Bread, oatmeal, or mush can be made more digestible by the addition of about five grains of diastase to the pound of food. Since the salivary and pancreatic fluids are deficient in children, we have a valuable remedy for them in diastase. Because this drug digests starches it is a fat-producer. The malt-extracts supply only a limited and uncertain amount of diastase, hence we must look to the new isolated diastase known as taka-diastase to meet this indication. For amylaceous dyspepsia the following rules should be observed: (1) Omit from the dietary, so far as practicable, pastry, condiments, syrups, and sugars. (2) Chew the food, especially bread and vegetables, slowly and thoroughly.

(3) Take two and one-half grains of taka-diastase immediately after eating. (4) Avoid any habit which causes the saliva to be expectorated instead of swallowed for at least one hour after eating. (8) Correct any temporary excess of acidity in the stomach by a dose of sodium bicarbonate.—*Therapeutic Gazette*, 1896, No. 9, p. 593.

[Of quite as much importance is the formation of the habit of masticating starchy foods in as dry a condition as is possible. The sensation of thirst can be obviated by taking a pint of hot water one hour before the meal.—R. W. W.]

The Treatment of Tuberculous Peritonitis.—Dr. Thomas believes that the fibrous and ulcerative forms of this disease do not yield to operative measures. In young subjects a good diet aided by tonics, mild and repeated counter-irritation over the abdomen, and a coating of iodoform-collodion may result in cure. In three reported cases he obtained complete cures through the use of a creosote clyster. Seven drops of this drug, increased to double the amount, are administered in five ounces of cod-liver oil. In addition, applications of ichthyol may be used. The conclusion is suggested that this treatment will yield good results when operation is not indicated nor possible.—*Journal des Praticiens*, 1896, No. 36, p. 565.

Thyroidine.—Dr. R. Lépine states that this substance can be obtained: (1) by digesting the gland with an artificial gastric juice; or (2) by extracting with alcohol and a mixture of water and glycerin; or (3)—and this is the best—by extracting with a 7½ per cent. salt-solution through which carbon dioxide is passed, and after acidifying subjecting the resultant to boiling. The recent indications for the use of this remedy are based upon its marked inhibitory action upon utero-ovarian activity and its excitant action upon the mammary glands. Thus if a nursing-woman finds that her menstruation reappears and her milk becomes impoverished the administration of this substance will meet both indications.—*La Semaine Médicale*, 1896, No. 42, p. 333.

The Treatment of Itching by Large Doses of Calcium Chloride.—Dr. Thomas D. Savill administers this drug in doses of not less than twenty grains three times daily, which should be increased even to double this amount. It should be given after meals in a wineglassful of water. Should it cause thirst, and to cover the salty taste, one drachm of tincture of orange-peel and one ounce of chloroform-water, which make it really agreeable, can be added. It is not possible, as yet, to indicate precisely which cases are most suitable for this treatment, but it is worth while trying in all instances where itching is a troublesome feature. No absolute failures have been met with, although sometimes the dose has to be considerable and continued for several weeks, especially in long-standing cases.—*British Medical Journal*, 1896, No. 1864, p. 732.

The Action of Ozone on Nutrition.—MM. Butte and Peyron have found from their experiments on animals that the inhalation of ozonized air determines an increase in the amount of elimination of total nitrogen, urea, and phosphoric acid.—*La Semaine Médicale*, 1896, No. 42, p. 338.

The Treatment of Inoperable Local Tuberculosis.—M. CAROMILAS has used with complete success for a patient suffering from osteitis of the pubis with double suppuration, salpingitis, and incipient pulmonary disease, all tuberculous, an injection into the foci of suppuration composed of camphor, 5; resorcin, 4; olive oil, 10; carbon disulphide, 12. This is useful in the majority of instances of inoperable local tuberculosis.—*La Presse Médicale*, 1896, No. 77, p. 488.

Anuria Cured by Vesical Injections.—DR. ALBESPY reports a single instance of complete anuria of four days' duration apparently due to complete spasm of the entire urinary tract. A decoction of belladonna-leaves, 10 to 500, with 10 parts of boric acid, was injected through a metallic catheter, thus hoping to relieve the spasm of the unstriped muscle of the bladder by the well-known dilating action of belladonna when absorbed by the vesical mucous membrane. Of this injection about two ounces were left in the bladder. As a result more than ten ounces of urine were obtained, and a repetition of the injection was followed by a copious flow of urine. It is evident from this recital that there are a certain number of instances in which the anuria is due to a spasm of the tissues produced through the motor nerves, proceeding from the solar plexus. In these instances the action of belladonna will serve as a touchstone when there are difficulties in diagnosis.—*Bulletin Général de Thérapeutique*, 1896, 5e liv. p. 225.

The Action of Benzacetin in Neuralgia.—DR. A. REISS has made use of the following mixture: benzacetin, 85.8; caffein, 8.5; and citric acid, 5.7 per cent., in his practice at the Insane Asylum at Stephansfeld. In old cases of habitual headaches, neuralgia, and migraine the action was satisfactory. Improvement followed in from one-quarter to three hours and persisted from one to two days. Unpleasant circulatory and digestive symptoms were observed in only two instances. The usual dose was eighteen grains. If one dose was not sufficient, the second was given in from one-half to one hour. Of sixty-one patients eighteen were completely cured, twenty improved, with questionable results in five, and none in eighteen.—*Therapeutische Monatshefte*, 1896, Heft 6, S. 319.

[Benzacetin is said to be acetamido-methyl-salicylic acid, which is soluble in alcohol and slightly in water.—R. W. W.]

The Treatment of Erysipelas with Vaseline.—DR. H. KÖSTER states that this consists in painting the parts affected twice daily, covering the application with linen and fastening with a gauze bandage. Beyond this the treatment is purely symptomatic; for headache, acetanilid or antipyrin; if the temperature is over 104° F., quinine in seven-grain doses; if cerebral symptoms, ice-bag to the head, a cathartic, as calomel or senna; for delirium, chloral; for heart-weakness, digitalis and alcohol. The advantages of this method are obvious. The one hundred and thirty patients show that the results are equally as good as with other methods. (1) The duration of the fever is the same as with lead-lotion, painting with iodine, ichthyol-vaselin, or sublimate-lanolin. (2) This treatment results in extension of the process as frequently as do the others, for none is exempt. (3) Complications,

especially of phlegmonous processes, are not more frequent than under other methods. (4) This method is equally efficient, and presents no danger of exciting untoward symptoms, as burning, odor, or poisoning, and the additional advantage that it is inexpensive.—*Therapeutische Monatshefte*, 1896, Heft 6, S. 299.

Uranium Nitrate.—Dr. Samuel West reports that, when administered in the treatment of diabetes mellitus, this drug diminishes thirst, reduces the amount of urine which is passed, and reduces the percentage of sugar. Ten grains can be administered three times daily without inconvenience as far as concerns digestion. He concludes that it is a drug of considerable value, though, like other drugs, it cannot be relied upon to produce equally good results in all cases indiscriminately.—*Medical Press and Circular*, 1896, No. 2989, p. 127.

The Treatment of Incontinence of Urine by Suggestion.—Dr. A. Cullerre has treated twenty-four patients, infants and children, during the past four years. Of these hypnotic suggestion has cured twenty, benefited two, and in two instances only has there been failure to obtain permanent relief. The degree of hypnotism is not of great importance. The formula of suggestion varies according to the case: not to wet the bed; to awaken the moment the desire is felt; to awaken at a given hour to urinate; to think while sleeping that it is not necessary to wet the bed. If necessary, there can be provoked an insomnia intended to accustom the brain to perceive the need of urination. Soon this insomnia disappears of itself, and the patient, accustomed to watch his bladder, does it even although sleeping. Generally the cure is immediate; sometimes it is delayed for several weeks. The age of the patients treated was from six to twenty-three years; the method is applicable above the age of three years. The author believes that essential incontinence of urine in infants and adolescents is a neuropathic stigma, in general benign, but sometimes a forerunner of more or less grave nervous affections, as neurasthenia, hysteria, hypochondriasis, mental obsessions, being founded upon preoccupation or fixed ideas relative to the urinary function. The patients come from families in which the neuropathic stigmata are of different forms, not necessarily mental alienation, properly speaking, but often signs of physical and moral degeneration. Incontinence is transmissible by similar heredity; it may even become a family disease.—*Archives de Neurologie*, 1896, No. 7, p. 1.

Creosote Valerianate.—Dr. E. Grawitz uses this remedy in gelatin capsules, which conceal the taste and odor of the drug. In each capsule three drops are placed, and one of these is given thrice daily with milk. The dose can be increased to thirty drops daily. The results of its use with thirty-five tuberculous patients shows that it is an advantageous method of prescribing creosote.—*Therapeutische Monatshefte*, 1896, Heft 7, S. 384.

The Influence of Somatose upon the Milk of Nursing-women.—Dr. Richard Drews states that this food exercises a specific action upon the mammary glands of nursing-women in that it produces an abundant

secretion of milk and rapidly removes the disorders observed during lactation. It is, therefore, recommended when the quantity is insufficient and when at the commencement of lactation the flow seems about to cease, in order that the dangers of artificial alimentation may be avoided. It goes without saying that the integrity of the gland is perfect and there are present no diseases which prevent nursing. The dose is three or four teaspoonfuls daily taken in milk, hot bouillon, or cocoa. It has hardly any taste, and therefore is easily administered and its use continued for a long time.—*Revue de Thérapeutique Médico-Chirurgicale*, 1896, No. 13, p. 392.

The Treatment of Whooping-cough.—Dr. Ferreira reports twelve instances of the use of bromoform, and concludes that (1) in case of failure of topical applications or when they are not possible we must resort to general therapeutic measures. (2) The preparations of belladonna in intensive doses, and especially of atropine, exercise a real influence upon the cough. The difficulty of managing the remedies and their incontestable dangers prevent their popular use. (3) Bromoform, if it does not surpass, can be placed equal with belladonna and atropine for this purpose. It acts promptly and diminishes the attacks and produces amelioration and indeed cure when used with energy and in accord with the severity of the disease. (4) The drug is of easy administration in infancy, and children bear the remedy remarkably well. (5) Through its double action (sedative and antiseptic) it fulfils two indications in combating the spasmodic element and attacking the germs causing the disease. (6) It should be used *larga manu* in view of the excellent results obtained. The drug is given in solution, with sufficient alcohol for dissolving it, in dose of from three to six drops daily for children under one year, and six to fifteen drops for larger children.—*Bulletin Général de Thérapeutique*, 1896, 12e liv., p. 529.

The Preparations of Strophanthus.—Drs. Horatio C. Wood and William S. Carter have made a laboratory study of both an extract of the drug as well as of strophanthin. They found that the extract was an active preparation, having but little action upon the vasomotor centres, as compared with what it has upon the heart and vessel-walls. Experiments with commercial strophanthin showed that this also is an active substance, more markedly raising the arterial pressure than did the extract, thus confirming the conclusion of Rothziegel and Koralzewski that the former is a superior preparation of the drug.—*American Journal of Pharmacy*, 1896, No. 7, p. 353.

Senecio (Groundsel).—Drs. Dalché and Heim report their clinical observations upon the use of a dry extract of Senecio vulgaris in pill-form, six grains each, to the number of eight or ten daily. It seems to calm menstrual pain so long as the genital organs are healthy; but when there is uterine or periuterine disease it is without effect. This limits its employment to such conditions as the dysmenorrhœa of chloro-anæmics, of nervous hysterics or neurasthenics, of young girls, whose menstrual pains of long duration appear to be due to painful or defective ovulation. Beyond its influence upon pain it is an open question whether it affects the appearance of menstruation, favoring the establishment of the menstrual flow. It fails

in the presence of various uterine and periuterine difficulties as well as in the painful symptoms of the intermenstrual period.—*Les Nouveaux Remèdes*, 1896, No. 14, p. 409.

The Treatment of Dog-bites.—Dr. J. C. Vaughan recommends the immediate treatment with strong fuming nitric or hydrochloric acid. One or two drops will suffice, and the slough soon separates leaving a clean wound, which heals readily. The silver nitrate stick is objectionable in that when pushed into the wound it practically repeats the bite, driving the deeper-lying saliva deeper into the tissues and further outside, and hence better protected by the albumin coagulum-film formed in the wound by this treatment.—*Indian Medical Gazette*, 1896, No. 8, p. 273.

Morphine Chloride in Poisoning by Potassium Cyanide.—Dr. L. Heim, in his experiments upon mice, found that subcutaneous injections of morphine chloride after fatal doses of potassium cyanide saved six out of ten experimented upon. The explanation is probably that in the presence of the iron in the alkaline blood these two substances are, by chemical interchange, transformed into oxydimorphine and Berlin-blue, both of which are relatively non-poisonous.—*Münchener medicinische Wochenschrift*, 1896, No. 37, S. 861.

The Contraindications to the Bromides.—Dr. S. Sterling sounds a note of warning to the indiscriminate and prolonged use of the bromides by anæmic individuals. So also in respiratory catarrhs, which they are likely to aggravate, caution should be exercised. In gastric and intestinal diseases the loss of appetite, burning or pressure in the stomach, nausea, vomiting, and diarrhœa are symptoms, caused by large doses, which should not be ignored. When cutaneous irritation or hyperæsthesia is present the irritant effects of the bromides may contraindicate their use. A consideration of these facts should lead to more care in the prescribing of these salts.—*Therapeutische Monatshefte*, 1896, Heft 9, S. 500.

Absolute Alcohol as Disinfectant for Instruments.—Dr. Robert L. Randolph, after laboratory experimentation, has reached the following conclusions: (1) that in a great number of eye-instruments by far the majority are infected by exposure to the air; (2) that absolute alcohol would seem to be a valuable disinfectant for instruments infected under the conditions which ordinarily surround us in everyday life; (3) that the septic character of instruments infected with a pure culture of staphylococcus albus is not altered by exposure f or twenty minutes to the action of absolute alcohol. The alcohol used is supposed to have a strength varying from $98\frac{1}{3}$ to $99\frac{9}{10}$ per cent.—*Johns Hopkins Hospital Bulletin*, 1896, Nos. 66 and 67, p. 185.

The "Disintoxication" of the Blood in Cerebral Rheumatism.—Dr. H. Barré reports a single instance in which in spite of repeated cold baths and sodium salicylate the temperature rapidly rose. The method is as follows: first, the needle through which the artificial serum is to be passed is introduced into the right median cephalic vein. As the transfusion is

beginning to be made, another needle, through which the blood is to be withdrawn, is introduced into the corresponding vein of the other arm. Improvement showed itself when about six ounces of blood, which had been replaced by the artificial serum, had been withdrawn. Twenty ounces in all were withdrawn. The patient recovered. The essential peculiarity of the process consists in the simultaneous drawing of blood and introduction of artificial serum in quantity not greater than that of the blood withdrawn.—*Medical Press and Circular*, 1896, No. 10, p. 230.

The Treatment of Rheumatism by Local Application of Methyl Salicylate.—MM. LANNOIS and LINOSSIER have found that this method will advantageously replace the use of salicylates when given by the mouth, but should only be thus used when they are impossible to be administered, the reason being the difficulty of applying the drug to very painful joints. In the subacute and chronic forms it is useful, and its absorption is equally certain.—*La Semaine Médicale*, 1896, No. 42, p. 388.

The Treatment of Cardiac Failure.—DR. T. GRAINGER STEWART believes that the most important agent is rest, next the element of hope, and finally diet. Here excess of fluids is to be guarded against. Alcohol as an article of diet must not be used, even to habitual slight excess, nor in any form which gives rise to dyspepsia. Massage in the great majority of cases of cardiac dilatation diminishes the area of cardiac dulness. The character of the cardiac sounds and the rhythm and strength of the pulse correspondingly improve, the patients usually experience a sensation of comfort and feel the better for the treatment, although rarely the opposite effect may be produced. Although the immediate effects pass off in a few hours, they frequently do not pass off completely. Repeated applications bring about a permanent diminution of the area of dulness, with improvement of the pulse and patient's sensations, although the effect rarely may be deleterious. Movements with limited resistance show in a large proportion of cases immediate improvement in the condition of the heart, as shown by percussion and auscultation, the sounds becoming more distinct and the area of dulness diminishing to a greater or less extent. In many cases the rhythm of the pulse improves and the heart becomes more vigorous. While the immediate effect is in so far temporary, the heart rarely goes back to its previous condition of dilatation, but remains somewhat smaller than it was before the exercises, and gradual improvement of a lasting kind sets in, so that the heart recovers its tone and the area of dulness diminishes. The saline bath (five pounds of sodium chloride with eight ounces of calcium chloride in a forty-gallon bath), in which carbon dioxide in large quantities is liberated, produces a most striking diminution of the area of cardiac dulness, with slowing and strengthening of the pulse, changes just as definite as those produced by the exercises above mentioned.—*British Medical Journal*, 1896, No. 1864, p. 701.

A Modified Method of Administering Oxygen and Ether.—DR. H. A. HARE states that when oxygen is given with ether vomiting is less frequently met with, excessive pallor is rarely seen, and post-operative

depression seems to be largely avoided. The apparatus which he suggests consists of a somewhat funnel-shaped piece of leather having a greater diameter in one direction than in another, into which is fitted a piece of soft felt or spongiopiline almost a quarter of an inch thick. In the under surface of the leather cone is inserted a small metal tube, and at the opening of this tube a small hole is cut in the spongiopiline. The ether is poured upon the spongiopiline in the cone, in the apex of which is placed some absorbent cotton. The oxygen enters the cone by means of a rubber tube attached to the above-mentioned metal entrance. With this apparatus (1) the supply of oxygen can be delivered in varying quantities without altering the amount of the anæsthetic; (2) any quantity of anæsthetic can be employed without necessarily increasing the oxygen; (3) the leather cone prevents the rapid evaporation of the ether; (4) the spongiopiline will retain a larger quantity of ether than an ordinary towel; (5) chloroform can be substituted for ether by removing a metal cap which can be placed on the apex of the cone, thus permitting fresh air to be inhaled with the anæsthetic in such quantities as may be desired.—*Therapeutic Gazette*, 1896, No. 6, p. 445.

Local Cocaine-anæsthesia.—Dott. Tito Costa calls attention to the fact that when the injections are made with the solution at a temperature of 122° F. to 131° F. the following advantages are presented: (1) weak solutions (0.5 to 0.4 per cent.) possess a marked anæsthetic power; (2) local anæsthesia appears immediately after injection; (3) with an equal quantity of solution injected there is obtained a greater zone of anæsthetized tissue; (4) with an equal amount of cocaine more than double the amount of tissue can be anæsthetized by this method, and since the percentage of drug is lessened the toxic effects are markedly diminished. The elevated temperature is an obstacle to the absorption of the drug, thus making the injected solution more diffusible in the meshwork of the tissues and therefore increasing the anæsthetic zone.—*Vratch*, 1896, No. 26, p. 737.

A New Stain for the Gonococcus.—A new combination of aniline colors is proposed by Pick and Jacobsohn as a bacterial stain very well adapted to the gonococcus (*Berliner klinische Wochenschrift*, 1896, No. 36, 811). It consists of 20 c.cm. of distilled water to which 15 drops of carbolic fuchsin and 8 drops of a saturated alcoholic solution of methylene-blue have been added. Cover-glass preparations are dried and fixed in the usual way, and are immersed in the stain for from eight to ten seconds. They are then washed in water, are again dried, and mounted in balsam.

When stained by this method the cells of gonorrhœal pus have a faint reddish color, forming a good contrast-background for the intensely blue gonococci.

[As the result of a few tests of this stain it would appear that the best results are obtained when the stain is allowed somewhat longer action than the eight or ten seconds mentioned by Pick and Jacobsohn, but from one to two minutes is amply sufficient, and the preparations are then very handsome. It is not claimed that this is a selective stain for the gonococcus alone; simply that it is well adapted to the morphological detection of that germ.]

Anæsthesia.—The semi-centennial of the first public demonstration of the anæsthetic properties of ether by Dr. William Thomas Green Morton, its discoverer, has been the occasion for the presentation of a considerable number of valuable papers.

Dr. Frederic W. Hewitt believes that it is somewhat unlikely that an anæsthetic will be found which would possess the simplicity, the agreeableness, and the potency which characterize the administration of chloroform, the safety which distinguishes ether, and the freedom from after-effects which is such an advantage in the case of nitrous oxide. Putting on one side the possibility of the discovery of some new anæsthetic or analgesic agent, there is every reason to believe that our present systems and methods are capable of considerable development and improvement. Numerous possibilities suggest themselves. A far wider range of utility may be in store for certain drugs which are known to have anæsthetic properties, but which, for some reason or other, have not come into favor. Novel successions or combinations of anæsthetics are very likely to be worked out and to prove useful. Chloroform-anæsthesia may yet be rendered as safe as that of ether. The anæsthesia of nitrous oxide in presence of oxygen may have a great future before it. Our knowledge as to the best lines of treatment for different types or subjects is rapidly on the increase. And, lastly, let us hope that we may discover means for preventing or minimizing the after-effects of ether and chloroform.—*The Practitioner*, 1896, No. 340, p. 347.

Mr. George Rowell sums up our present knowledge by stating that chloroform is a dangerous drug because of its deleterious effect upon the heart. By avoidance of air-limitation, and by carefully watching the various symptoms displayed by the patient, an overdose of chloroform should never occur. This being avoided, the risks during chloroform administration are mainly associated with imperfect degrees of anæsthesia, and the great risk of danger lies in the occurrence of asphyxia, however produced. Although with experience and care the number of chloroform-deaths is capable of considerable reduction, yet chloroform is not, in spite of its advantages, the most desirable drug for routine use in producing anæsthesia. Still, it is of great value in cases in which, from some diseased condition of the patient, or from the particular requirements of the surgeon, ether and mixtures are contra-indicated; and this, beyond doubt, is its true sphere of usefulness.—*Ibidem*, p. 357.

Mr. F. Woodhouse Braine, from thirty years' experience in the administration of anæsthetics, has arrived at the conclusion that ether should rank *facile princeps* among anæsthetics, and were he limited to the employment of only one anæsthetic agent out of the number that have at various times been brought forward, he would without hesitation give the preference to ether.—*Ibidem*, p. 365.

Mr. George H. Bailey believes the cases in which ether should not be used are those in which its administration cannot be kept up, as in and about the mouth. There is no distinction in perfect anæsthetic effect between ether and chloroform, and the former, given as it should be, can be used in the same cases as chloroform. In the very young and very old ether is preferred. Most certainly the young die under chloroform, and the stimulation of ether is good for the old. Neither is used in organic disease, but then neither do

we operate under such conditions. It seems that in this fiftieth year of the use of ether it is in far greater and increasing favor than some years ago. —*Ibidem*, p. 369.

MR. MARMADUKE SHIELD pleads for better instruction in the administration of anæsthetics, and cites as remedies for the prevailing haphazard methods of practice that instruction in anæsthetics should be made compulsory and that an examination in this subject is desirable.—*Ibidem*, p. 387.

The Treatment of Graves's Disease.—DR. W. H. THOMSON, believing that this has its origin from gastro-intestinal ptomaïne-poisoning, regards diet as of great importance; meat is as poisonous in this as saccharine food in diabetes. It is an absolute necessity that a milk-diet be kept up for two years if the patients expect to get well. It is doubtful whether the majority of adults can digest fresh milk in any quantity continuously, unless the stomach is spared the task of the initial curdling of the milk with its own juices, which is a necessary preliminary to its final digestion. The experience of the peoples whose only staple is milk seems to show that milk should be fermented before using it. If matzoon is not procurable, a domestic article can be made as follows: half an ordinary yeast-cake is broken up in a pint of slightly warmed milk, which is then put aside in the kitchen for twelve hours until it has begun to curdle. One-fourth of this fermented milk is now stirred into three times this quantity of warmed fresh milk and set aside, as before, when, in summer, at least, it will be fermented in twelve hours, and could then be used but for the bitter taste of the yeast still perceptible in it. A third specimen, made in the same proportion, from the second, will generally have only the slightly acid flavor of good matzoon. After this all that is needed is to keep enough matzoon from each day's making to ferment the next day's supply. When it is thus curdled it should be well stirred and put in a refrigerator to prevent its becoming too sour. It is well not to have it too cold when used, and it should be smooth like cream and eaten with a spoon, as is soup, rather than drunk. A moderate amount of fish, and not more than one egg daily, can be taken. Bread may be used freely. Among vegetables potatoes, corn, beans, and peas are injurious if there be any tendency to diarrhœa, which necessitates the avoidance of both vegetables and fruits. Asparagus is mischievous, and often oatmeal, while tomatos in salad with lettuce generally agree. No pastry nor cakes, excepting gingerbread, are allowed. No coffee, tea, nor cocoa should be taken, and spirits should be used only when syncopal symptoms arise. Mercurial purgation should be used systematically once each week; a blue pill, followed by a saline, or one-third of a grain of calomel rubbed up with milk-sugar, every fifteen minutes, for six doses, and a saline administered three hours after the last dose. The chief medicinal treatment consists in the systematic and unremitting use of intestinal antiseptics. As formulas: phenol-bismuth, 10 grains, with sodium benzoate and bismuth subcarbonate, of each 5 grains, in capsules, two hours after each meal; or salol, 2½, ichthyol, 1½, and sodium benzoate and bismuth salicylate, of each 7½ grains, in capsules, two hours after each meal. These antiseptics exert a specific control over the vascular and cardiac disturbances in marked contrast to the inefficiency of cardiac sedatives, and they are apparently without any injurious effect. They affect just

as favorably other symptoms, as insomnia, tremor, and agitation. Strophanthus, in doses of from 5 to 10 drops of the tincture, may be used as an adjunct, and for nocturnal attacks of dyspnœa and palpitation 10 drops of the tincture of belladonna may be employed. In some cases of violent action of the heart 5 drops of tincture of aconite, night and morning, may be prescribed. So far as operation is concerned, there is no class of patients more unpromising for surgical interference than they are at any period of the malady.—*New York Medical Journal*, 1886, No. 932, p. 473; No. 933, p. 505.

MEDICINE.

UNDER THE CHARGE OF

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A Case of Carcinoma of the Thoracic Duct with Chylous Ascites.—SCHRAMM (*Berliner klinische Wochenschrift*, October 26, 1896) reports a case of carcinoma of the thoracic duct associated with chylous ascites. As a cause of chylous ascites, carcinoma of the thoracic duct is extremely rare. Leydhecker reported the only case that has appeared in the literature. The latter, however, was able to find records of only five cases of cancer of the thoracic duct, but in none of these instances was the disease accompanied by chylous ascites. Schramm's case was the second that had come under his observation. It occurred in a woman, aged fifty-three years, who came under observation on January 2, 1896. During the summer of 1895 she gradually grew weaker and became much emaciated. Later, gastric symptoms, as loss of appetite and a sense of pressure after eating, appeared. Severe pain in the abdomen and back followed, with distention of the former, that was first noticed on December 20, 1895. When the patient came under observation there was marked abdominal distention. Physical examination showed that there were evidences of an exudate in the abdominal cavity. This apparently was encysted, as the dulness was limited chiefly to the epigastric, umbilical, and hypogastric regions, the lumbar region giving a tympanitic note on percussion. There was no movable dulness, but fluctuation was quite marked. A gynecological examination failed to clear up the diagnosis of the case. On January 15th the abdomen was opened and sixteen litres of milky, whitish-yellow fluid were removed. No definite abdominal changes could be made out, however. Two days later the patient died, and an autopsy was made. A hard, irregular tumor about the size of the fist occupied the region of the head of the pancreas. Nodules were scattered over the surface of the gall-bladder, and others were distributed

throughout the substance of the liver. The thoracic duct from the first lumbar vertebra to its termination in the left subclavian vein presented cord-like thickenings as large as one's finger. At the termination of the duct were infiltrated glands that surrounded and compressed the jugular and subclavian veins. It was impossible to determine where the primary seat of the growth was. The thoracic duct was found to be completely obliterated or thrombosed at the points where the nodules were situated. Microscopic examination of sections from the various growths showed the cells to be carcinomatous in character. Chemical and microscopic examination of the chylous fluid showed that it was of the nature of chyle, although it was not so rich in albumin and fat as normal chyle usually is. Sugar was present in very small quantity, as is usually the case in normal chyle. Owing to the obliteration of the thoracic duct at various points, and to compression of enlarged glands at its orifice, there was complete obstruction to the flow of chyle. A rupture of the duct was not to be made out at any point, and Schramm thinks that pathologic changes in the wall of the duct permitted a transudation of its contents into the peritoneal cavity. It was not possible on microscopic examination to determine definitely the primary focus, although the pancreas was considered the probable primary seat of the disease.

Ammonia in the Gastric Juice and in the Saliva.—STICKER (*Münch. medicin. Wochenschr.*, October 20 and 27, 1896) investigates the source of the ammonia contained in the stomach-secretion. Rosenheim found ammonia present, in quantities varying from 0.1 to 0.5 per mille, in the gastric juice of healthy individuals in all stages of digestion and after the ingestion of various food-mixtures. Rosenheim's observation has been confirmed by others. As an easy method of demonstrating the presence of ammonia, Sticker recommends the following modification of Streng's test: to a drop of the gastric juice a drop of a 10 per cent. solution of NaOH is added on a porcelain plate. A drop of Nessler's reagent is placed on the plate in the immediate vicinity. The two drops are then covered by a watch-crystal. Ammonia is liberated from the drop of gastric juice and enters into combination with the Nessler's reagent, producing ammonio-mercuric iodide, which causes a yellow, yellowish-red to greenish-red cloudiness of the latter. Rosenheim found that the food contained only a very small amount of ammonia, and held that most of the latter found in the gastric juice was produced by the peptic glands. Sticker doubts this assertion, and claims that the ammonia in the gastric contents is derived from the saliva swallowed with the food, which he proceeds to prove.

By means of the test already mentioned, and by other tests as well, he demonstrated that the saliva practically always contains ammonia in varying percentages. It appears to be present in two forms; first, as a loosely combined compound in the form of ammonium carbonate; and, secondly, as ammonium chloride, which is a much more stable compound. The latter he finds constantly present, whilst the former is frequently absent. The loosely combined ammonia is often present in the saliva in anæmia and in febrile conditions, in both of which he has been able to demonstrate the presence of ammonia in the blood. According to the estimates of the various writers,

the amount of ammonia in the gastric juice ranges between 0.1 and 0.25 grm. per mille. Sticker, from a large number of analyses, finds that the ammonia in the saliva varies between 0.0476 and 0.27 per mille, and thus concludes that it is quite probable that the ammonia in the stomach-contents is derived from the saliva swallowed with the food. He administered special meals to a number of patients and then removed the gastric contents at varying intervals—immediately, one hour, and two hours afterward—and found that the meal removed immediately after being taken contained more ammonia than did those that were allowed to remain one or two hours. Sticker considers this strong evidence against the theory that the ammonia is produced by the peptic glands, in which instance one would expect the amount of ammonia to increase as digestion went on. In four cases the gastric contents were removed two hours after the meal was taken, and ammonia found to be present. It had previously been demonstrated to be present in the sputum. The stomach was then washed out with a 10 per cent. soda solution, and the wash-water last removed proved to be free from ammonia. He then waited fifteen minutes and removed the fluid that had been secreted in the meantime and tested it for ammonia, finding the latter absent. From these experiments Sticker concludes that ammonia is not normally produced in the stomach, but that it is derived from the saliva which is swallowed with the food.

Thrombosis of the Abdominal Aorta.—Bell (*British Medical Journal*, October 24, 1896) gives an account of an interesting case of a patient who was admitted to the Lowestoft Hospital under his care, suffering from total paraplegia and intense pain in the legs and lower part of the back. On the day before admission the patient, who was thirty years of age, was walking along the street when he was suddenly seized with intense pain in the back and abdomen. His legs became suddenly powerless and he fell to the ground, but he did not lose consciousness.

An examination showed absolute paralysis of both lower extremities, with anæsthesia and analgesia of both legs extending as high up as the lower third of the thigh on both sides. There was a zone of hyperæsthesia two inches in width above the anæsthetic area. Sensation above this appeared normal. Knee-jerks, plantar and cremasteric reflexes were absent. The patient was in a condition of severe shock. There were involuntary passages of urine and feces, and control of the sphincters of the bladder and bowel was completely lost. The anæsthetic area extended upward and finally reached the trunk. Paraplegia became complete, and the lower extremities were cold and quite pulseless. On the fourth day after the illness began there was commencing gangrene of the skin of the right calf and of part of the scrotum, and the patient exhaled a strong gangrenous odor. The same day the patient died in a condition of collapse. Only an incomplete autopsy was permitted. The lumbar enlargement of the cord and the cauda equina were removed, but showed no gross lesions. The abdominal aorta was found occluded by a firm white coagulum from a point one and three-quarters of an inch above its bifurcation and extending into the common iliacs on either side, one inch into the left and seven-eighths of an inch into the right. No changes in the arterial coat could be made out. Bell thinks that the

paraplegia was due to the shutting off of the blood-supply to the cord through the three lowest lumbar arteries. These arteries go to supply the lumbar enlargement of the cord, from which arise the first, second, third, and fourth sacral nerves, and the sacral plexus, from which the great and small sciatic and pudic nerves, as well as muscular branches, originate. It is quite probable that the sudden deprivation of this portion of the cord of its blood-supply was the cause of the extensive paralysis that ensued.

Erythema Exudativum Multiforme of the Buccal Mucous Membrane.—LUKASIEWICZ (*Wiener klinische Wochenschr.*, 1896, ix. 23) in November and December, 1895, observed at his Polyclinic in Innsbruck, two cases of erythema multiforme of the mouth in otherwise healthy men, and in whom the skin remained free during the whole course of the disease. The upper and lower lip, the inner surface of the cheeks, and the gums show superficial, round, or irregular areas with the loss of substance. These varied in size from a millet-seed to a pea, were of a grayish color on the surface, and bled very easily. On the soft palate there were typical vesicles and small reddish ulcerations. In two other cases, with similar lesions on the buccal mucous membrane, the affection extended to the skin and produced a typical efflorescence of erythema exudativum multiforme. Lukasiewicz thinks that the mucous membrane of the mouth may be the point of infection in such cases, if one views the disease as one of the infectious diseases which it most resembles. In cases in which the disease is limited to the buccal cavity one bases the diagnosis on the acuteness of the process, the superficial character, the peripheral spreading, and quick loss of the epithelium over the erythematous area. Pemphigus shows larger vesicles and the inflammatory process is more deeply situated and runs a more chronic course. Herpes zoster is usually one-sided and associated with severe neuralgic pain. Syphilitic papules would be distinguished by the associated infiltration.

Acute Alcoholic Intoxication in a Child, followed by Convulsions and Paralysis of Central Origin and by Multiple Neuritis.—HERTER (*New York Medical Journal*, November 7, 1896) reports a case of acute alcoholic intoxication in a child, aged three and a half years, due to drinking twelve ounces of pure whiskey. The child at once fell to the floor and became unconscious, remaining in a state of stupor which lasted for more than two months. During this time he had repeated convulsions, partly general and partly limited to the left side. A right-sided paralysis, especially marked in the arm, developed. Later, extreme contractures, particularly of the left side, appeared. There was marked atrophy of the muscles of the upper and lower extremities, with loss of faradic excitability. Dilatation of the pupils, strabismus, nystagmus, and repeated vomiting were symptoms present during the first two months. For several weeks there were evidences of consolidation of the lower lobe of the right lung, during which there was irregular fever. The child did not come under observation until three weeks after the commencement of the illness, and at first the symptoms were thought likely due to a meningitis. When it was ascertained that the child had taken a large draught of whiskey, the symptoms of neuritis, which had become very marked, were referred to this cause. Herter was led to believe that the

cerebral symptoms were also of alcoholic origin. Five months after the illness began the child appeared perfectly well, with the exception of slight stammering in speaking, so that no opportunity was given of studying the anatomical lesions.

What the cerebral lesions likely were Herter is unable to state, but refers to Berkley's experiments on rabbits in which increasing doses of alcohol were administered. All animals showed marked loss of weight, and two of them died in convulsions. Sections of the brain-cortex showed that the cell-bodies of the nerve-cells stained imperfectly. There was commencing swelling of the nucleoli, as well as swelling of the branches of certain dendrons, while in other instances the dendrites were apparently atrophic.

The cell-bodies of the vascular neuroglia-cells appeared increased in size, and their protoplasmic extensions were thick and knotty. The bloodvessels showed marked changes. In the arteries and intermediary vessels the nuclei of the endothelial cells were everywhere swollen and in places fragmented. The change in the muscular protoplasm of the vessel-walls was especially distinct, and indicated that the cells were undergoing a retrogressive change. Numerous leucocytes in various stages of degeneration were present in the perivascular spaces. The changes in the nervous structures appeared to be dependent on the vascular changes. Herter thinks that alcoholic intoxication may produce similar alterations in the cerebral cortex in man.

On the Constant Occurrence of Anchylostomum Duodenale in Negroes, without Anæmia; and on the Fauna of the Negro Intestine.—ZINN and JACOBY, in Gerhardt's clinic, have made some interesting observations on the intestinal parasites of twenty-three native African negroes, representing various parts of East and West Africa. The following parasites were found: anchylostomum duodenale, twenty-one times; trichocephalus dispar, eight times; ascaris, eight times; anguillula stercoralis, four times; tæniæ, four times; amœbæ, twice. The subjects in whom anchylostomum was not found were not examined with sufficient thoroughness to disprove the title of this article. An infection after leaving Africa could be excluded. The negroes showed no sign of the anæmia so striking as a symptom in Europeans with anchylostomiasis, so that, as the authors say, the negroes have anchylostomum, but not anchylostomiasis. The difference in the cases examined could not be explained by a small number of worms, and the authors ascribe it to a racial peculiarity, such as that shown by some races toward malaria. The necessity for prophylaxis on the part of members of the Caucasian race exposed to the parasites in Africa, or from the emigration of Africans, is obvious.—*Berliner klin. Wochenschrift*, 1896, No. 36.

A Symptom of Fecal Tumors.—R. GERSUNY (*Wiener klin. Wochenschrift*, 1896, No. 40) calls attention to a new symptom in certain cases of fecal tumor. It consists simply in the fact that if strong pressure be slowly made with the finger on the tumor, the mucous membrane of the intestine will adhere in the depression, and will separate from it when the pressure is slowly removed. It is this separation which is diagnostic. It is necessary for the production of the symptom that the mucous membrane of the intestine be dry and the fecal mass not too hard. It is especially important that

there be enough gas present in the intestine to cause separation of the intestine from the mass. These conditions can evidently rarely be prevented by other things than fecal tumor.

Some interesting illustrative cases are cited, showing the value of the symptom, and some suggestive remarks on chronic constipation are added.

The Percussion of the Spleen.—BÄUMLER calls attention to the advantage of determining the size of the spleen by percussion instead of palpation, as is almost universally done. He holds that an enlarged spleen can rarely be felt, even when there is no tympanites, whereas even moderate enlargement can be made out by percussion. Dulness in an oval figure, seven to eight by ten centimetres, according to him, indicates enlargement. In order to avoid the difficulty caused by the position of the thin spleen between organs of different degrees of resonance, it is important to percuss with different degrees of force in different parts. Bäumler holds that even the posterior and upper parts of the spleen can be mapped out. Usually the diagonal position of the patient is most convenient, but it is sometimes necessary to try various positions. Von Ziemssen agrees in general with the opinion of Bäumler, and, like him, urges the desirability of marking out and measuring the area of dulness.—*Wiener klin. Wochenschrift*, 1896, No. 40, p. 909.

Dyspeptic Asthma.—BOAS, at the recent Naturforscher Versammlung, read a paper on this subject, concerning which there is a great difference of opinion. Boas has observed twelve cases of varying degrees of severity. In some there were diseases of the lungs or heart, in others only gastro-intestinal disorders, especially atony with excess of hydrochloric acid. A satisfactory explanation of the attacks cannot be given. While French observers believe the lungs and right heart are implicated, some of the Germans hold that there is a reflex depression of the force of the left ventricle. Boas finds in some cases that the diaphragm is unduly elevated. The view of Albu that the theory of autointoxication explains the attacks is rejected by Boas on the ground of his own chemical examinations.—*Berliner klinische Wochenschrift*, 1896, No. 39.

Amœboid Cells in Ascitic Fluid.—VON LEYDEN and SCHAUDINN (*Sitzungsbericht der Kgl. Preuss. Akad. der Wissensch. zu Berlin*, 30 Juli, 1896) report the discovery of an amœboid protozoon in ascitic fluid. This was first found by Prof. Leyden in the fluid from a woman of twenty-two years, with heart-disease and ascites. In the course of numerous tappings made for the relief of the latter colorless gelatinous cells were found, often aggregated in nests. They changed their shape, threw out pseudopodial processes and withdrew them again, showing active motion at ordinary temperature (23° to 24° C.). They could also be observed to unite in peculiar meshes with nodes on the processes thrown out. These nodes were at times loosened and in turn developed into cells. About the same time similar bodies were found in the ascitic fluid of a man of sixty-three years, who had carcinoma of the stomach. In the first patient nodular masses could be felt in the abdomen after tapping, so it was assumed that she, too, had cancer. The examination of the bodies was made by Dr. Schaudinn,

assistant in the zoölogical laboratory of the University of Berlin. Dr. Schaudinn finds the cells are parasitic protozoa, the exact classification of which he does not wish to make in the present unsettled state of the subject. "They are undoubtedly amœbæ, and perhaps nearly related to the free-living placopus."

The objection has often been made that the extensive work on parasitic protozoa, as those of malaria, dysentery, etc., has all been done by pathologists, not by specialists, and for that reason is often belittled by the said specialists. It is therefore a matter of congratulation that Prof. von Leyden availed himself of an expert "who for years has been working on protozoa." Whether he is able to distinguish these from body-cells any better than a Pfeiffer, an Adamkiewicz, or a Sudakewitsch, remains to be seen.

Physiology and Pathology of the Thyroid Gland.—In an address on the above subject VICTOR HORSLEY (*British Medical Journal*, December 5, 1896) reviews very carefully the experimental work that has been done with the object in view of ascertaining what the true physiological function of the thyroid gland is. The histological structure of the thyroid and of the parathyroid is dealt with, as well as the pathological changes that occur in the gland in myxœdema and exophthalmic goitre. In summarizing our present knowledge with regard to the function of the thyroid, Horsley states that it is generally agreed that whereas myxœdema and cretinism result from simple loss of function of the gland, exophthalmic goitre in its various degrees results from a perversion of that function.

The Effect of the Weather on Hæmoptysis.—EGGER (*Correspondenzblatt für schw. Aerzte*, 1896, No. 18) investigated this subject by means of the records of the Basel policlinic in 1895, with the following results: the change from good to bad weather, especially in the transition from warm to cold or cold to warm seasons, corresponds with a change for the worse in the condition of many patients with pulmonary disease. In a large number of these cases coughing is increased, and in a small number of such persons the cough causes an increase of pressure in the pulmonary circulation and so favors hemorrhage. Changes in the weather which favor "catching cold" have similar consequences, as do epidemic bronchitis, influenza, etc.

Herpes Labialis in Tubercular Meningitis.—HABEL reports an instructive case from Eichhorst's clinic (*Deutsche med. Wochenschrift*, 1896, No. 42). The symptoms of meningitis were plain though not striking; there was pain on pressure over the left mastoid process, without positive signs of ear-disease; slight dulness over the apex of the left lung. Numerous herpes vesicles appeared about the mouth. Eichhorst made the diagnosis of tubercular meningitis, largely on account of the slow course and the moderate temperature. Lumbar puncture was practised, but without finding fluid. Post-mortem examination showed tubercular meningitis, affecting especially the pia of the base of the brain and in the Sylvian fossæ, with dilatation of the ventricles. There was also a caseous focus in the left apex and beginning miliary tuberculosis of all the organs.

Out of sixty-five cases of tubercular meningitis treated in Eichhorst's

clinic since 1884, this is the only one with herpes, the rarity of which symptom in the disease is well known. [Nothing is said in regard to the possibility of septic infection.] The cause of the emptiness of the dural canal was not disclosed in the case reported. In twelve cases examined by puncture in the Zurich clinic tuberculosis was present in eight. Bacilli were found in seven of these. Habel calls attention to the formation of a slimy coagulum in the fluid withdrawn in the tubercular cases, but not in others. The bacilli were found in the coagula.

Changes in the Gray Matter of the Spinal Cord in Pernicious Anæmia.—TEICHMÜLLER (*Deutsche Zeitschr. für Nervenheilkunde*, viii. H. 5 u. 6) reports a case of pernicious anæmia with arteriosclerosis, paræsthesia, chronic enteritis, and increased knee-jerk. Post mortem small hemorrhages were found in the corpora striata and corpora quadrigemina. Microscopic examination showed changes such as have been described by others in the posterior columns, and, in addition, hemorrhages in both the gray and white matter, with degeneration in the anterior and lateral columns of the cord. The author combats the view that the changes in the cord in pernicious anæmia represent combined-system disease and looks on the change in the gray matter as of chief importance.

The Diagnosis of Malignant Tumors of the Lung by the Sputum.—BETSCHART adds another to the small number of cases in which malignant disease of the lung has been diagnosticated by the sputum-examination. The sputum in this case was of variable color, often brownish-red, as in infarct, but never resembling raspberry-jelly, as was at one time thought to be the case in such conditions. Microscopically there were free fat-globules, leucocytes, and large numbers of epithelioid cells more or less aggregated. The sputum also contained particles visible to the naked eye—in fact, up to three mm. in length, yellowish or brownish, and gelatinous-looking, which proved to be carcinomatous. The diagnosis thus made was confirmed by post-mortem examination.—*Virchow's Archiv*, Bd. 143, H. 1.

Pneumothorax following Puncture.—A. FRAENKEL reports the following instructive case: a man, aged seventy-three years, had signs of left-sided pleural effusion with severe emphysema. Puncture was made in order to determine the presence of fluid, but with a negative result. Soon after this the patient had collapse-symptoms, with cyanosis and frequent respiration, and died in four days. During life the upper left part of the thorax in front expanded less than the right, while the lower part of the left side was retracted strongly with each inspiration. There was no succussion, no metallic percussion-note. Autopsy revealed left-sided pneumothorax. The left lung was very much retracted, the pleural cavity empty. There was no evidence of inflammation. The lungs were soft and inelastic. On blowing up the left one no perforation could be found. Fraenkel concluded that the pneumothorax was due to the puncture, and warns against its use in cases of emphysema unless the indications are clear.—*Zeitschr. für prakt. Aerzte*, 1896, Nos. 13 and 14.

SURGERY.

UNDER THE CHARGE OF
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Gastro-entero-anastomosis; Entero-anastomosis; Cholecystentero-anastomosis without Preliminary Opening of the Organs to be Anastomosed.—SOULIGOUX describes the following operations (*La Presse Médicale*, 1896, No. 59):

He produces on each of the two organs to be anastomosed an area of sphacelus. These two points are brought together, face to face, and retained by sutures; peritoneal adhesions form. At the end of forty-eight hours the sphacelated zones fall in, and the adhesions are more than sufficient to prevent separation of the two organs. The instruments needed are a pair of powerful forceps, a small Reverdin needle, No. 3 silk, and solid caustic potash.

Gastro-entero-anastomosis. After cœliotomy the first loop of jejunum is sought and a silk thread is passed through the mesentery, in order to draw the intestine out of the abdominal cavity. The intestine at the proper point is caught between the blades of the forceps and compressed with all the force the operator can employ. The two intestinal walls are thus made so thin that they are transparent. The same manœuvres are repeated upon the stomach. Here it is important that the assistant exposes well the fold formed on the stomach, and that he does not allow the mucosa to slip until it is secured in the grasp of the forceps.

Two fortified zones are thus determined on the two organs, the surfaces of which soon take on a black coloration. The peritoneum only has resisted the crushing effect of the forceps. The line of suture is commenced about 2 mm. from the margin of the contused area, uniting the two inner surfaces throughout their entire extent. At this moment the crushed surfaces are cauterized with caustic potash, after which the assistant sponges the area thus cauterized. The sutures are then placed in the two external borders. If any discolored area appears outside the suture, this point is inverted by additional sutures. The operation may be completed in twenty minutes. It remains only to close the abdominal cavity.

Entero-anastomosis. This is performed in the same manner as the gastro-enterostomy.

Cholecystentero-anastomosis. The author has endeavored to produce something analogous to the ampulla of Vater. In this procedure he opens neither the gall-bladder nor the intestine.

Upon the intestine he traces an elliptical incision, 2 cm. wide and 3 cm.

long, comprising only the serous and muscular coats. The flap thus made is removed. The mucosa exposed is compressed and cauterized to the extent of ½ cm.

Upon the anterior and posterior face of the gall-bladder a small needle, carrying a fine silk thread, is passed. The posterior thread is attached to the posterior border of the intestinal wound, the summit or base of the gall-bladder is crushed and cauterized with the potash, and the anterior thread is passed through the intestine in front of the intestinal wound, the posterior thread having already been so placed. On drawing on these threads the gall-bladder is invaginated in the intestinal canal, and while retained in this position by the assistant making traction on these threads, the suture around the margin of the anastomosis is made. The two original threads are then removed. At the end of four hours the sphacelus falls in and the communication is complete.

The Objects and Limits of Operations for Cancer.—In discussing this subject CHEYNE (*British Medical Journal*, February 15, 1896) says: "The primary object of operation in cancer is, of course, the prolongation of the patient's life and the alleviation of his local trouble; and what I propose to assert in these lectures is that these results are in the most cases best attained by aiming, whenever it is possible, at the cure of the disease. Until recently, and even now, many surgeons approach operation in these cases impressed with the view that real cure is practically hopeless, and that with few rare exceptions the most that can be expected is prolongation of life for a variable length of time. I therefore hold and would strongly urge the view that the first question to be kept before us in investigating a case of cancer is whether there is a possibility of curing the disease or not. Such a point of view makes a great difference in the operation, for it is not then sufficient to remove only the noticeable disease, but it is necessary to take away as far as possible the parts in which the disease may have become disseminated, although still unrecognizable—in other words, possibly infected lymph-areas. Hence it is necessary in all cases where the disease has lasted any time, or extended at all deeply, not only to remove the primary mass freely, but also to take away the whole lymphatic area up to and including the nearest lymphatic glands. Thus the operation performed with the object of curing the disease becomes a much more extensive one, and consequently much more serious than that which simply aims at getting rid of the main trouble for a time and prolonging the patient's life. The first question to be considered, then, with regard to a case of cancer is the anatomical one, namely, whether it is anatomically possible to remove all the local disease and the probably infected lymphatic area so thoroughly as to give a fair chance of non-recurrence. If this is anatomically possible, the next questions are, What are the chances of death as the result of the operation? and What will be the subsequent functional result?

"The primary object of operation in these cases being, therefore, cure, the limit of the radical operation is where there is no reasonable prospect of removing the whole disease, or where, along with a very poor prospect of success, there is a very high mortality from the attempt. In such cases I do not think the operation should be mentioned at all, for even when the

patient recovers from it, and has presumably two or three months added to his life, few would, I think, thank one for it, seeing that these two or three months have been spent in convalescing from a serious and, in the end, useless operation.

"But even in case where hope of cure or marked prolongation of life by radical operation is out of the question, operation may sometimes be advisable with the object of removing symptoms which are immediately threatening to life—such operations as tracheotomy, colotomy, etc.—or, in the second place, with the idea of taking the primary disease from a part—such as the mouth or throat—where its continued development means intense pain and trouble, and thus of substituting for these troubles an easier death from exhaustion. A *sine qua non* of such operations must, however, be that they are reasonably free from immediate risk; and with regard to the second class that there is a prospect of attaining the object of the operation, namely, the entire removal of the disease from the part operated upon. I do not think a dangerous operation is allowable for the relief of symptoms, however proper it may be if a cure may be hoped for.

"There are, then, two different objects to be held in view and two different questions as regards operation which we must bear in mind in treating a case of cancer, namely, Can we reasonably hope for a cure? for if we can, a serious or dangerous operation is permissible; or, cure not being possible, Can we decidedly ameliorate the patient's condition by operation, such operation, however, not involving any great danger to life."

In operations for cancer of the breast the author details and advocates the thorough radical operation, with the removal of the entire breast in all cases, the pectoral fascia, the lymphatic channels, and all the lymph-glands in the nearest groups, including the thorough dissection and clearing out of the axillary glands.

As regards the limits of operation for cure of breast-cancer, therefore, he would exclude from operation:

1. Cases of cancer *en cuirasse*.
2. Cases where there is a large mass in the axilla, involving the nerves.
3. Cases where large glands can be felt above the clavicle.
4. All cases where secondary cancer exists elsewhere.

In any case short of these he believes the patient should be allowed to choose. Even when the operation fails to cure the prolongation of life is often marked, much more so after the thorough operations than after the ordinary imperfect procedure.

As regards cures—that is, freedom from any recurrence for over three years—the author's statistics show that by the radical method of operating which he advocates the number of cures far outnumber, even in the comparatively few cases he has operated upon, the cures recorded by the older operators, which goes to show that this radical form of operation gives not only the best results as regards prolongation of life, but also the greatest proportion of cures. Of his 21 cases there were no deaths; 12, or 57 per cent., cures; 9, or 42.7 per cent., cases recurring externally or internally. This is the result obtained in all operable cases, and not in a selected series of favorable cases.

While the results are steadily improving, the proportion of cases which

succumb to cancer is still considerable, and will not, he thinks, be much reduced till patients and doctors understand that there is a good chance of radical cure from early and thorough operation in mammary cancer, and that a suspicious lump in the breast, especially in elderly women, is not a thing to be watched, for over 90 per cent. of the swellings of the breast in elderly women are cancerous.

Contrary to the usual dictum, it is now found that the most favorable of all cases for operation are those of atrophic scirrhus, and the more nearly a cancer approaches the atrophic form the greater is the chance of permanent cure. The author believes that the malignancy of cancer in the individual case has a great deal to do with the favorable result of the operation, more than the early period of the operation.

Concerning Nephrectomy.—PERTHES (*Deut. Zeit. für Chir.*, Band xiii. Heft 3), after an exhaustive statistical study of the result of different operations upon the kidney, concludes that in all cases of hydronephrosis and pyonephrosis, and wherever surgical interference is indicated and the strength of the patient permits, the radical operation should be employed.

In long-standing cases of hydronephrosis, where large areas are involved and there are crises of colic, and in cases of pyonephrosis that endanger the whole system, the complete extirpation of the kidney should be the operation.

In contraindication to nephrotomy this operation makes possible a primary union and the return to health in a short time. This fact makes the danger of the operation much less than one would suppose at first sight.

We remove a sound kidney to free a patient from a urinary fistula. Should we produce a urinary fistula to save a worthless kidney?

The Sterilization of Catgut by Boiling in Water.—HOFMEISTER (*Centralbl. für Chir.*, 1896) has modified his procedure for the sterilization of catgut by boiling, and now believes that the following method yields a perfectly sterile and in every way satisfactory preparation:

The raw catgut is to be wrapped evenly in a single layer upon strong glass plates (or nickel-iron frames). The thread should be drawn as taut as possible and the two ends firmly knotted. If separate pieces of thread are wrapped upon the same plate or frame, the ends must be securely tied.

The cagut is then transferred:

1. To a solution of formalin in water (2 to 4 per cent.) for from twelve to forty-eight hours.

2. Wash in running water for at least twelve hours, to remove the excess of formalin.

3. Boil in water for from five to twenty minutes.

4. Preserve in absolute alcohol to which have been added 5 per cent. of glycerin and 4 per cent. of carbolic acid or 1 per cent. sublimate (in case metal frames are employed the sublimate should not be used). For use the holders have to be put upright in an oblong glass trough; in this way the thread can be drawn easily, but still will not loosen itself spontaneously.

While the exact strength of the formalin solution and the length of time of the boiling do not influence the result in particular, the careful wrapping

and the thorough washing are indispensable to the attainment of a satisfactory result. The firm tension made in wrapping the gut is still further raised by the action of the formalin (therefore strong plates should be used) and must be maintained until the hardening is accomplished.

The plates must remain in alcohol for some hours before the knotted end of the thread is loosened. If the tension has been deficient, the thread gets thick and elastic like rubber, and cannot well be used for ligature-material.

If the formalin is not entirely washed out before boiling the gut, the thread will break easily.

The arrangement of the threads in but one layer permits of equal access of the formalin and of the washing and boiling water. The hardened and washed catgut may be preserved in alcohol indefinitely, without injury, before the boiling. It may also be boiled repeatedly, if the end of the thread is tightly knotted again, to maintain the tension.

The author claims for this procedure:

1. The absolute destruction of germs.
2. Preservation of the tensile strength of the catgut.
3. Avoidance of complicated methods and expensive instruments.

The thread, wrapped up once, need not be touched with the fingers from the beginning of the sterilizaton until used. The bacteriological examination of the gut thus prepared has proved it to be free from germs.

In Bruns's clinic the method has been in use since February, and has given satisfaction in every way.

Immediate Suture of the Bladder after Hypogastric Incision.—De Vlaccos, in the *Revue de Chirurgie*, 1896, No. 8, favors immediate suture of the bladder after suprapubic lithotomy. This method has been employed by Albert, Nicoladoni, Ultzmann, Kispert, Maximow, Vincent, Brenner, Irschik, Herson, Bassini, and others.

The author thinks the contraindications to the immediate suture are very rare; personally, he has never seen a single case. He cites an example with considerable alteration of the bladder-wall successfully sutured. The difficulty of absolutely closing the bladder should not deter surgeons from using the method, as a catheter retained in the bladder will keep it empty, and there will not be tension enough to cause leakage in the prevesical space. The suture may be made with silk or catgut. De Vlaccos prefers the latter. The method has been equally as successful in old age as in childhood and middle age.

He has allowed his patients to get about on the twelfth or fifteenth day.

Conclusion and Practical Remarks on 300 Cases of Breast-excision for Malignant Disease.—Snow, after briefly reviewing his experience in the cases mentioned in the title (*British Medical Journal*, 1896, No. 1868), concludes as follows:

Infection of the bone-marrow is the great obstacle to radical cure by operation in mammary carcinoma. This takes place in all ordinary cases within six months of inception, frequently earlier; its symptoms do not appear until within the second year; they may not be accompanied by nodular deposit or other palpable evidence of cancer for five or six years more. In

the class of cases known as "atrophic" the condition may be delayed for several years.

Hence, these latter excepted, apparent immunity from "recurrence for three years" is a wholly inadequate basis on which to pronounce the disease radically extirpated, unless insidious marrow-symptoms are also excluded by careful examination, and unless there is good reason to believe that excision has been performed before the marrow has become implicated. The most important practical point in excision of the female breast is a wide dissection of the subcutaneous connective tissue around the diseased organ, from sternum to axilla, from the subclavian fossa to the cartilage of the seventh rib. This tissue is the really dangerous tract to be feared as a nidus for recurrence; not, as the author holds, prolongations of the mammary parenchyma. But it can always be adequately extirpated by dissecting off a flap of healthy skin, and so bringing the edges to immediate union without undue tension, as was done in all his second class of cases.

No advantage whatever is gained by the destruction of an extensive skin-tract. In every single instance he has yet met with the utmost benefit that surgery could confer was perfectly compatible with the union of the greater part of the wound by first intention. Should the skin be infiltrated, no amount of ablation will avail to prevent reappearance, previously insured by the marrow-condition. One such case is now under his care. A single lady had the skin of the left side from clavicle to abdomen, from sternum to posterior axillary fold, removed by an eminent surgeon in June, 1895, and replaced by grafts from shoulder and thigh. The whole tract aforesaid is now a deep depression, at the bottom of which lie the ribs, covered by a thin cicatrix. The patient has extensive deposit above the clavicle, in the opposite mamma and axilla; the sites whence the grafts were taken being occupied by large keloid scars half an inch thick.

Another startling novelty, only to be mentioned with almost incredulous surprise, is amputation at the shoulder-joint for the purpose of procuring a covering flap from the deltoid.

If we encounter instances of scirrhus, or even of encephaloid (acute) carcinoma, of but two or three months' duration, no pains should be spared to eradicate permanently the disease by dissecting out the entire mamma, a wide area of subcutaneous tissue around, and the contents of the axilla; and at least one and one-half hours should be devoted to that purpose. On the other hand, in advanced cases of long standing it is futile to risk life by prolonged and heroic measures when we know there is a deep-seated nidus which we cannot touch. The utmost advantage we can attain is the removal of the gross lesions without risk; prompt union of the wound; and then, by after-treatment with opium and cocaine, to procure a state in which the disease remains stationary for years or advances with almost imperceptible slowness. Examples of this Snow expects to narrate in another contribution.

Partial amputation of the mamma for carcinoma is wholly inadmissible, unless for purposes merely of palliation. For the smallest scirrhus "kernel" extirpation should be thorough. Thus there could not have been a more favorable case for radical cure than that of a woman, aged forty-seven years, who appeared in August, 1892, with a growth the size of a bean, of two months' duration, at the upper part of the right breast, and without any gland

enlargement. As he was about to leave town another surgeon operated, and unfortunately contented himself with a bare removal of the tumor. In the following October the disease was found to be rapidly advancing in the remainder of the breast, and was then at once excised with the axillary contents; now, however, too late, as visceral metastases shortly became evident.

At the beginning of the period referred to (1876) evacuation of the axillary contents was only resorted to occasionally, and "recurrence" here took place usually within six months. It is now very justly the rule; and even the worst cases seldom show any superficial deposit for at least two years. Yet to this routine practice three exceptions should be noted: (*a*) intracystic cancer-growths; (*b*) fairly recent atrophic cases; and (*c*) scirrhus appearing close to the sternum, whence the axilla is much more slowly infected than from other regions of the organ, the lymph-current flowing primarily to the thymus and mediastinal lymph-glands.

Subphrenic Abscess and Resection of the Kidney.—Subphrenic abscesses resulting from suppuration of the spleen are of rare occurrence, and the case detailed by CRAMER (*Deut. zeit. für chir.*, 1896, Band 42, Heft 6), as operated upon successfully in Professor Bardenheuer's clinic, is of great interest.

In the beginning of April the patient had a high fever and pain in the left abdominal region. In May the symptoms were of pleuritis. In July the patient had the symptoms of typhoid fever. From September to the middle of October the patient appeared to be well, and then in November she became violently ill with symptoms pointing to a subdiaphragmatic suppuration.

The diagnosis was finally established in consequence of the low position of the spleen, the dulness over the lower portion of the left thorax, and especially upon the to-and-fro motion of an exploratory needle synchronous with the respiration, and from which pus had been withdrawn. In other words, the motility of the abscess and of the enlarged spleen.

Such abscesses of the spleen are rare, and arise from infarction after infectious diseases, as typhoid fever, pyæmia, malarial fever, articular rheumatism, etc., or may come through the contiguity of abscess in other organs. In operating the pleura should first be exposed, but not opened, to determine whether there is a pleuritic effusion or suppuration. If this is present, it should be opened and the abscess attacked through this channel. If, however, it is not involved, the incision should be closed and the abscess opened posteriorly beneath the diaphragm.

The treatment of the splenic abscess depends on the extent of the involvement; it may be resected, or the entire organ may be removed if the disease is too extensive. The origin of subdiaphragmatic abscesses is frequently connected with disease of the pelvic viscera in women. The author reports such a case in which, after the opening of the abscess, the adnexa were successfully removed.

The author also reports a case of tuberculous abscess of the kidney cured by resection of the kidney and removal of the diseased portion. The section was made through sound tissue. The pelvis of the kidney was opened, and its internal aspect was seen to be healthy. The hemorrhage was not marked; the wound was tamponed, as was the perinephritic abscess-cavity. During

the healing the dressing was changed daily, as it rapidly became soaked with urine. The amount of urine became less and less, and finally disappeared altogether. There was no post-operative fever. After the urine ceased to flow the granulating wound was drawn together with adhesive plaster and rapidly united. The urine is free from albumin, and the wound remained completely closed.

In the treatment of these cases the author believes nephrectomy is indicated when the hæmatogenic tuberculosis has invaded the major portion of the kidney, when the pelvis of the organ is involved and it is impossible to decide how far the disease extends If the ureter is diseased, it should be removed as far as the disease extends at the same time If this is not done, there is danger of establishing an abdominal ureter fistula that will not heal.

The cases reported show that there are forms of this disease in which a portion of the kidney may be resected and a portion of the organ be retained with the hope of re-establishment of function and a compensatory hypertrophy of the portion remaining.

A Study of Pyæmia and Sepsis.—HENTSCHEL, in a monograph (*Cent. für Chir.*, 1896, No. 40), in studying this form of disease, classifies its manifestations under the forms of pyæmia, septicæmia, sepsis, and sapræmia.

Pyæmia is that condition produced solely by pyogenic micro-organisms. Septicæmia is that form in which the micro-organisms develop in the blood only (rare in man). Sepsis and sapræmia are systemic intoxications arising from a local infection.

He illustrates pyæmia by a case in which a tendo-vaginitis of the index-finger was followed by a suppurative arthritis of the shoulder-joint. The diplococcus lanceolatus (Fränkel-Weichselbaum) was found by microscopic investigation and cultures at both points, but would not produce suppuration after inoculation into animals.

In a second case pyæmia followed a furunculosis of the lip. The culture showed staphylococcus citreus and other forms.

Two other cases illustrate typical sepsis; *i. e.*, toxæmia. In both cases there was an absorption of toxins after gangrenous processes. One was a compound fracture of the leg followed by consecutive sepsis, which became systemic despite an amputation. The bacteriological examination showed the blood to be entirely free from bacteria or spores.

The second case on which a post-mortem examination was made showed how extensive the systemic involvement was. A periproctal abscess, with no tendency to healing, gave rise to the systemic infection. No bacteria were found in the blood. There was marked cell-necrosis. The symptoms were those of grave pyæmia. The author is of the opinion that in the production of these cases of pyæmia the absorption of the toxins is not the only question, but that the interchange between the living bacteria and the cells of the body is of more importance, although it should not be forgotten that the intoxication of saprophytic and pyogenic micro-organisms is greatly increased by their combination.

The Causation of Certain Malformations of the Extremities.—HLAWACEK (*Deut. Zeitsch. für Chir.*, Band 43, Hefte 1 und 2, 1896) reports a number of cases of defect in the development of the bones of the extremities. He explains their causation as follows:

1. The radius, os naviculare, os multangulum majus, metacarpus, and the two phalanges of the thumb, are formed by a transverse differentiation in the original radial line of Gegenbauer's archipterygium.

2. If pressure is exercised, at a certain time, upon this radial line, through a disproportion between the fœtus and amnional cavity, when the development and differentiation into its individual parts have not as yet progressed so far that each part can develop further of itself, there may be produced a destruction of the radial line *in toto*, and through the same cause a pathological position of the hand (as in cases of defective radius with but three or four fingers on the hand): the distal portion of the proximal end of the radius may escape this destruction (cases in which the upper portion of the radius is present).

3. If this pressure is exerted at a period after the differentiation has already taken place and development has progressed further, the injury becomes localized to the particular part or to an injury to the punctum minoris resistentiæ (epiphysiolyse), which is not direct upon the particular part, but influences its later development (cases of rudimentary distal portion of the radius with presence of carpal, metacarpal, and phalangeal bones).

4. The pressure may produce coalescence, and, as a result, total or partial defect of the radius.

The author also reports a case of defective development in the femur seen in a fourteen-year-old girl. The deformity involved the central proximal portion of the femur, while the entire remainder of the limb was normal in structure and development. There was an absence of the joint between the femur and pelvis.

Metastatic Exanthemata of the Skin due to Septic Infection.—MEYER (*Arch. für klin. Chir.*, Band 52, Heft 1, 1896), after a careful review of the literature dealing with exanthemata found in contagious diseases, says that the evidence is not sufficiently strong as yet to prove that they are true metastases of cocci, but that the evidence clearly points in that direction.

Much more interest is attached to the group of observations in which the same forms of bacteria have been found as those which apparently produce the original disease. These are the cases of sepsis and pyæmia with cutaneous metastases.

After reviewing a number of cases already reported, he details a case in which the microscopic and bacteriological study showed that the case was one of true metastases to the skin from a general systemic staphylococcus infection. Intracapillary masses of cocci which were found and must be considered the cause of the eruption could only have reached their location through the vascular system. The microscopic section showed that in the youngest eruptions, where there was still present inflammation of an acute type, there were no cocci found in the epidermis, but were always first seen in the papillary layer. In no section were the hair-follicles found to be infected, although they were often in close contact with the foci of suppuration and are in the majority of cases the point of entrance of impetiginous eruptions.

OPHTHALMOLOGY.

UNDER THE CHARGE OF

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The Electro-magnet in the Diagnosis of Particles of Iron or Steel within the Eyeball.—E. VALUDE (Paris), in a paper upon the use of the electro-magnet in ocular surgery (*La Médecine Moderne*, 7 Ann. No. 76), calls attention to its diagnostic value in some cases in determining that a piece of metal capable of attraction by the magnet is within the eye. Thus in the case of a doubtful foreign body suspended in the vitreous, the bringing of the magnet suddenly close to the eye would cause it to move visibly if subject to the magnetic attraction. The same result would be attained by bringing the instrument close to the eye and alternately closing and opening the circuit, making the magnet alternately active or neutral.

Even when the foreign body cannot be seen its presence and nature can be ascertained in this way when the proximity of the magnet causes pain through the disturbance of the position of the foreign body. Positive evidence of this kind would be conclusive. Valude, however, reports a case in which the failure to cause pain by bringing the magnet close to the eye was rather misleading, for the eye being subsequently enucleated a piece of steel was found within it. He points out, in this connection, that a more powerful magnet might have elicited the symptom.

Formation of Artificial Pupil by Extra-ocular Iridotomy.—J. B. LAWFORD (London) describes (*Ophthalmic Review*, vol. xv. No. 178) and urges the advantages for certain cases of the operation proposed by Schoeler. He regards the operation as applicable to: (1) cases of opacity of the cornea involving the central area, but leaving some portion of the periphery clear; (2) cases in which there is stationary partial opacity of the lens, either a small nuclear, sharply defined opacity, or an anterior polar cataract, the base of which is as wide, or nearly as wide, as the pupil; (3) cases in which there is, as a result of disease or as a congenital defect, obstruction of the pupil by deposit on the anterior lens-capsule, the pupillary margin of the iris being free.

The operation is performed by making an incision in the cornea, close to but not at the sclero-corneal junction, and about 5 or 6 mm. in length. The knife is carefully withdrawn, so that the iris may not follow it through the wound. The blades of a pair of *fine* curved iris-forceps are then introduced through the incision, and the iris gently grasped close to the pupillary border and withdrawn. The forceps should have no teeth, but slightly

roughened or finely milled blades. The protruding portion of iris is picked up and divided by a single snip of the iris-scissors. The cut should be at right-angles to the pupillary margin, and should extend through half the width of the iris. The protruding part of the iris is then replaced with a spatula and a solution of physostigmine instilled.

Serum-therapy in Diphtheria of the Eyes and Post-diphtheritic Palsies of the Ocular Muscles.—R. GREEF (Berlin), from a review of reported cases and the records of his own cases, finds (*Deutsche medicinische Wochenschrift*, 1896, No. 37): of forty-two cases of true diphtheria of the eyes, one had progressed so far toward recovery that the share of the treatment in producing the result is doubtful, and two cases terminated fatally in spite of the serum-injections; but of the remaining cases the result was extremely favorable in thirty-seven. Cases of spurious diphtheria of the eyes have not been sufficiently distinguished from those of true diphtheria to decide yet as to the influence of serum-therapy upon their course. As to the prevention of post-diphtheritic paralysis of the accommodation, this method of treatment seems to be without the slightest influence; and in the limited number of cases in which its action upon the course of diphtheritic paralyses of the ocular muscles has been observed, it has not been shown that any important beneficial influence is exerted by the antitoxin-serum in this respect.

The Management of Glaucoma.—S. O. RICHEY (Washington) has never seen a case of glaucoma, acute or chronic, that did not have a history of gout, inherited or acquired; and regarding the condition as the local expression of a general dyscrasia, lays down the following propositions as a guide in its management (*Annals of Ophthalmology and Otology*, October, 1896):

1. When syphilis is the agent of causation the indications are clear—antisyphilitic treatment. 2. Acute or chronic glaucoma of other origin finds its initial cause and beginning in the digestive tract. 3. A departure from the normal physiological processes in the digestive tract intoxicates slowly, progressively, and accumulatively both the vascular and nervous systems, producing a degrading tissue-change in various organs; and interstitial ophthalmitis (glaucoma), an interstitial nephritis, etc., which may be precipitated into a violently active form by injury, exposure, a more than usually indiscreet meal, or by a severe emotional crisis. 4. That chronic simple glaucoma consists in a hyperplasia of connective tissue, involving ultimately the whole bulb, and cannot be cured by operation. 5. That the acute form is vascular in character and may be engrafted upon the chronic form. 6. That to meet the indications on this basis we must begin with the beginning of the disease and correct individual habits.

In the way of specific measures, Richey recommends in acute glaucoma the general hot-bath, the use of a myotic with taxis of the eyeball, the prompt exhibition of colchicine, the hot-bath repeated after several hours, if necessary, always keeping the patient warm after it. After gaining control of an attack, prophylaxis, as in the case of chronic simple glaucoma. In chronic glaucoma baths, always hot, several times a week, in a warm room, and immersing the whole body. The bath need not be hot enough (102° to 104°), or continued long enough, to produce sweating. A weak myotic

collyrium must be persisted in, with daily taxis for a few minutes, until the tension is normal and remains so. A mixture of sodium salicylate, ammonia, and taraxacum should be pushed to the point of physiological tinnitus; and continued as long as necessary, except suspending it to combat symptoms of irritable glaucoma that may arise, with colchicine, if it continues to act well. The intestinal tract must be soaked with hunyadi janos, three or four ounces being taken at bedtime, and repeated every night, perhaps in less quantity, until the stools become yellow.

Pigmented Striations in the Fundus.—B. WALSER (Vienna) reports (*Archives of Ophthalmology*, vol. xxv. No. 3) two cases of this condition. Both patients had normal acuteness of vision and normal visual fields, but gave histories of previous serious ocular inflammation. He proposes the following classification for such stripes: 1. Prevascular, attending retinitis proliferans. 2. Perivascular, with periarteritis. 3. Retrovascular, due to detachment or to folding of the retina. His cases were believed to belong under the last heading. The color of the stripes was gray, not brown.

Asthenopia and Nasal Obstruction.—P. W. MAXWELL (Dublin) has observed many patients with chronic aural catarrh who suffered from asthenopia, and who were relieved of the asthenopia by nasal treatment given with a view of benefit to the aural disease. He has found (*British Medical Journal*, No. 1865) that asthenopes who frequently or habitually breathe through the mouth are more likely to be benefited by nasal treatment than are those in whom the nasal mucous membrane is quite as abnormal, but who can breathe freely through the nose. The most usual causes of nasal obstruction, in this connection, are adenoids in the nasopharynx and enlarged turbinals. The former should be removed and the latter reduced by local treatment. Many of these cases would be relieved by glasses; but some get no benefit from any glass until the nose is cured.

DERMATOLOGY.

UNDER THE CHARGE OF

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Mycosis Fungoides.—E. BESNIER (*Pictorial Atlas of Skin Diseases and Syphilitic Affections*, Part I., 1896) presents a portrait representing the nodular and ulcerative stages of this disease (known also as granuloma fungoides) which is both true to life and excellent, but the notes and observations of this distin-

guished and lucid writer are even more valuable. The French school (with Besnier as one of its chief exponents) has done much to elucidate the many features of this disease. Until lately it had not been carefully studied, mainly because of its protean nature and the polymorphism of its manifestations, its periods of quiescence or of temporary remissions, and because of its frequently very prolonged course and duration. The case reported was that of a man, aged forty-seven years, the first affection of the skin having occurred in 1871, in the form of attacks of pruritus, with nocturnal paroxysms, worse in winter, but unaccompanied by any eruption. In 1872 smooth red patches on the trunk and abdomen, varying in intensity but always extremely pruriginous, were first noticed. Next year there was a lull. The following year an exacerbation of the disease compelled the patient to enter the St. Louis Hospital, where he stayed two months, and was discharged with the diagnosis of "prurigo." The following year he again entered the same hospital under Lailler, when the model was made and labelled "lichen ruber"(?). The whole body presented finely papular areas of a common variety of the poorly developed lichenoid patches which occur in the initial stage of mycosis. In 1876 there were very frequent attacks of boils, succeeded in the following years by a recurrence of the previous eruptions with severe and rebellious itching. Discouraged by the failure of all treatment, and his general health being good, the patient gave up seeking medical aid and went back to his business. Not until 1887 (*i. e.*, sixteen or seventeen years after the onset of itchy and cutaneous eruptions) did he return to the hospital. In the preceding two months round, red, pea-like lesions had developed on the red squamous patches over the front of the thorax, followed soon by small knob-like tumors which became united at their bases by diffuse swelling, which spread from right to left toward the axillæ, and from that time to his death the production and evolution of tumors never ceased for a moment. All the nodules and tumors did not undergo the same uniform process of evolution; some softened more or less rapidly in the centre, broke down, ulcerated, leaving craters with yellowish bases, wide, gaping openings, suppurating and discharging freely. During the year 1888 the increase in the number and agglomeration of the tumors was so great as to form a kind of shield over the thorax, around which lichenoid patches and knob-like tumors continually formed; numerous hypertrophic patches developed on the neck, around the axillæ, and elsewhere on the trunk, but there were very few on the limbs. Simultaneously some of the patches or tumors healed imperfectly, leaving a prominent and irregular scar. The general health continued good, and he suffered little or not at all except from the persistent itching. All the lymphatic glands were very large, but there was neither leucocythæmia nor enlargement of the spleen. Emaciation later set in, and the patient for the first time became anxious. The following year loss of appetite, rapid emaciation and weakness occurred; the lichenoid and itching patches remained persistent, but all the tumors shrank, and the purulent secretion diminished greatly. The patient succumbed a month later. No important macroscopic lesion was observed other than increase in the size of the spleen and tumefaction and ulceration about the upper laryngeal orifice, aryteno-epiglottidean folds, and the posterior surface of the larynx. The trachea, lungs, pleura, alimentary canal, and liver were all normal.

Besnier very properly calls attention to the following practical diagnostic points: (1) In all cases of doubtful itching skin disease, persistent, not amenable to ordinary treatment, whether it be like some indeterminate "erythrodermia," or psoriasis, or eczema (squamous, diffuse, discoid, or circinate), or like an urticaria, not amenable to treatment, or a lichenoid prurigo, and the like, the question of the possibility of mycosis fungoides in an early stage must be considered. The physician who remembers this may avoid an error in diagnosis. (2) The initial premycosic stage is not an incubation, properly so-called, but is the disease in action, not only in the parts which show lesions, but also in the apparently healthy parts, where its subjective manifestation is itchy.

[The case is referred to because it illustrates the peculiar and insidious course that this disease often pursues, rendering the diagnosis difficult.]

Bullous Dermatitis from Quinine.—J. C. JOHNSTON (*Journal of Cutaneous and Genito-Urinary Diseases*, July, 1896) records the case of a man, aged thirty-seven years, who had before experienced two attacks of quinine-dermatitis from taking two two-grain quinine pills. Two fifteen-drop doses of compound tincture of cinchona caused the present outbreak. Two days after the ingestion there was intolerable itching, and soon vesiculation on the genitalia, face, and ears, and the whole general surface of the body rapidly became the seat of a scarlatinoid dermatitis. As this began to decline the palms and soles became affected with blebs, some of which were large in the first outbreak, as much as eight ounces of serum being evacuated. The blebs recurred, and it was five or six weeks before recovery was complete, the palms being the last to recover. The chief points of interest are the rarity of the bullous manifestation from quinine, and the great disproportion between the violence of the cutaneous outbreak and the small amount of the drug ingested.

Tubercular Leprosy of the Face and its Treatment.—E. BESNIER (*Pictorial Atlas of Skin Diseases and Syphilitic Affections*, Part IV., 1896), in considering this subject gives two photographs of a patient, one of which was taken in 1888, before treatment, the other in 1896, after eight years had elapsed, showing wonderful improvement. Internal treatment (chaulmoogra oil up to 300 drops, salol up to 5 grammes daily) was perseveringly administered, whilst the tubercles were destroyed with the cautery and the methods for external reduction to be referred to. Chlorate of potassium, 15 grains daily, was taken for a period of three years (by the patient, unknown to the physician), but Besnier is not willing to say how far this latter medicine assisted in the improvement, which was already, as a matter of fact, accomplished. The point of interest in the local treatment is the beneficial result of a long course of electro-galvanic cauterization, which Besnier regards as a certain means of reducing leprous tubercular formation wherever localized. The thermo-cautery may also be used for the same purpose, but its effects are more difficult to limit; cicatrization of the ulcers after the crusts separate takes longer, and, above all, the plastic results are much less satisfactory. By the method advocated each tubercle is cauterized interstitially by means of single or multiple points, or by electro-caustic bars

when the surfaces to be destroyed are large. After cauterization should follow daily spraying with weak carbolic-acid water and dressing with sublimate or iodoform gauze, together with the management of cicatrization by means of nitrate of silver or zinc pencils, and the like. The same galvano-caustic application should be made to all affected points of the mucous membranes of the lips, nose, mouth, tongue, and pharynx. By their means it is quite easy to check and destroy the leprous foci so common in all these parts, and the results obtained are very remarkable. In the patient whose case is described, and in many other cases, the treatment was effective in limiting and destroying the disease in the mucous membranes.

[The experience of this writer corroborates that of other observers, namely, that much can be done by both local and general therapeusis to mitigate and relieve the manifestations of this disease, especially in countries where the disease is not epidemic.]

OBSTETRICS.

UNDER THE CHARGE OF

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The Use of Steam as an Antiseptic in the Treatment of Puerperal Endometritis.—In the *Centralblatt für Gynäkologie*, 1896, No. 49, KAHN reports his results in the treatment of septic puerperal endometritis by the intra-uterine injection of steam. The apparatus consisted of a kettle, heated by an alcohol-lamp, to which were attached a thermometer and also a hose terminating in an intra-uterine applicator having a hollow stem or handle. The thermometer should register 200° C. before the steam is used. He is accustomed to begin with steam at a temperature of 100° C. for two minutes, then allowing the temperature to rise to 115° C. for one minute. The higher the temperature of the steam the better is the result. Very little complaint of pain was made by patients; in some cases uterine contractions caused after-pains. In cases where pieces of placenta or membrane have been left within the uterus they must be removed, either by fingers or curette, before the steam is used. An intra-uterine douche is usually employed for two or three days after the use of the steam.

His first reported case was that of a multipara who had fever on the third day after labor. The lochial discharge was very foul. Pieces of placenta were removed from the uterus, but without result. The fever and foulness of the lochia remained. Accordingly steam was injected for one-quarter of a minute at 105° C. It caused no pain, but slight improvement, and on the

following day it was used at a temperature of 112° C. for one-half of a minute. The temperature steadily fell and the patient made a rapid recovery.

The second case was that of a primipara who had no attendance at labor, and who had slight fever which resisted intra-uterine douches. Steam was employed at 110° for one-quarter of a minute. The patient seemed much improved, but five days afterward a sudden rise of temperature accompanied the development of pyæmic abscesses in the elbow and in the clavicle. These subsided, however, and the patient ultimately recovered.

His third case was that of a multipara in whom steam was employed at 105° C. for three-quarters of a minute. This was followed by intra-uterine injections. The microscopic examination of the discharge from the uterus showed a great number of cocci in which was a diplococcus.

The fourth case was a multipara who was aborting at about three months. The placenta was retained and a very foul discharge resulted. She was admitted to the hospital suffering from fever. Under chloroform-narcosis a retained placenta was delivered and the uterus thoroughly douched. A temporary improvement only followed. Steam was used at a temperature of 105° C., and its use was followed by immediate improvement in the symptoms. Bacteriological examination of the contents of the uterus showed an abundance of gonococci present. The patient collapsed after an intra-uterine douche, but rallied again. On the day following chills and fever developed, and steam was again employed for one-quarter of a minute at 115° C. The temperature fell, but subsequently rose again and was accompanied by vomiting. Steam was again applied at 110° for one-quarter of a minute. Prolonged irrigation of the uterus was tried, but without benefit. The patient speedily failed, dying in collapse.

His next case was that of a multipara who had a normal labor, but who became septic. The uterus was emptied of bloodclots and pieces of membrane and packed with gauze. As fever increased steam was applied at 110° C. for one-half of a minute. Among the contents of the lochia were found tubercle-bacilli. The patient made, however, a good recovery.

The seventh case was that of a multipara who had had *placenta prævia lateralis* and had suffered from hemorrhage. The lochia was foul. The patient did well for a few days, and then had a severe chill with high temperature. Steam was employed at 115° C. for one-half a minute. Its use was followed by improvement in the patient's general condition. This patient ultimately made a good recovery. The secretion from the uterus was examined and found to be sterile.

In his eighth case, a primipara, a considerable mass of placenta had been left within the uterus, attached to its anterior wall. Steam was injected for one minute at a temperature of 115°, causing vigorous contractions in the uterus. Bacteriological examination of the lochia revealed the presence of gonococci.

His ninth case was that of a multipara taken with chills and fever and severe pain in the abdomen. Steam was employed at 100° C. for two minutes. The temperature, however, remained for some days apparently uninfluenced by the use of steam. The patient finally made a good recovery.

From his experience Kahn concludes that steam produces an effect upon the uterus in several ways. It increases the sensitiveness of the uterus;

stimulates contractions; the foul odor from the lochia disappears, while in no instance have bad results afterward been observed. The advantages claimed for this method are its efficiency in destroying bacteria within the uterus and also its favorable effect upon the general condition of the patient by stimulating the circulation of the blood and of lymph.

Retroversion of the Pregnant Uterus, with a New Method of Treatment.—MURDOCH CAMERON, in the *British Medical Journal*, 1896, No. 1870, reports a case of retroversion of the pregnant uterus and describes his treatment. He has found that disturbances of the bladder are among the first symptoms of this condition. Overdistention is frequently present. In most cases the uterus can be replaced before the third month if an anæsthetic be given. In a small number of cases impaction with adhesions is present, and extirpation of the uterus or treatment by abdominal incision is required. In fatal cases retention of urine becomes complete. Fever is present and bearing-down pains at the pelvic outlet, with great restlessness, delirium, intermittent pulse, coldness of the extremities, convulsions, and possibly rupture of the bladder. Previous to this case Cameron had never met one in which reduction was impossible.

The patient was a multipara who had enjoyed good health. The first symptom noticed was disturbance of the bladder, retention of urine being complete, with vomiting and constipation. The bladder was emptied by catheter and a considerable amount of blood was found in the urine. The patient was seized with labor-pains and hemorrhage. She was removed to a hospital. Upon examination under chloroform the os uteri was found above the symphysis. The bladder was irrigated, when bloodclots and shreds of mucus were removed. A blood-cast of the ureter, some fifteen inches long and about the thickness of a quill, was expelled. As the patient's condition was becoming critical, abdominal section was performed. In order to empty the bladder an opening was made upon its anterior surface outside the peritoneum. A large quantity of bloody urine and clot was extracted. Its walls were very much thickened. An assistant pressed the uterus up through the vagina while the operator raised the womb with great difficulty out of the pelvis. The bladder incision was sutured with fine silk and a double catheter was left within the bladder. The abdominal wall was closed in the usual manner. The patient made an uninterrupted recovery and was subsequently delivered of a healthy male child. Cameron calls attention to a serious complication in these cases which follows the sudden relief of a suddenly distended bladder. If urine be rapidly removed, hemorrhage is apt to follow, and hence the bladder should be slowly emptied or boric solution injected as the urine is withdrawn. A blood-cast of the ureter has seldom been observed.

The Results of the Modern Cæsarean Section.—In the *Archiv für Gynäkologie*, 1896, Band 52, Heft 2, STREBEL repeats the proposition of Wyder to the effect that craniotomy upon the living child must cease so soon as Cæsarean section shows an equally low mortality-rate for the mothers. He recalls the fact that at the hands of Leopold, Sänger, and Braun the mortality of Cæsarean section has fallen to 8, 4, and $3\frac{22}{100}$ per cent., respectively. He

does not consider symphysiotomy as offering greater advantages than Cæsarean section. Strebel reports ten cases of Cæsarean section in Wyder's clinic at Zurich, which may be summarized as follows:

Case I. was that of a multipara who had lost a child in difficult labor, and who had a pelvis whose true conjugate was 5 cms. It was determined to perform hysterectomy, as the woman could never bear a living child in the natural way. Hemorrhage was prevented by an elastic ligature about the cervix, the ovarian arteries were tied, the uterus amputated two fingers' breadth above the ligature, and the stump closed with buried-silk sutures through the muscle and fascia, the serous edges being brought together by continuous suture. The stump was dropped, and the abdomen closed without drainage. An uninterrupted recovery for mother and child followed.

[It is interesting to note in the report of this case that no mention is made of ligature applied directly to the uterine arteries. The operator seems to have trusted to his firm closure of the stump by buried-silk sutures, followed by the continuous suture of the serous surfaces. Should it be found that this method is reliable, it would certainly avoid the danger of wounding the ureters.—Ed.]

Case II. was that of a multipara on whom craniotomy had been previously done. Her pelvis was a justo-minor, and the operation was cœlio-hysterotomy, the uterus being sutured and returned to the abdominal cavity. Mother and child made a good recovery.

Case III. was a multipara who had a flat rhachitic pelvis, with a true conjugate of 5½ cms.; in this case cœlio-hysterotomy was done, the uterus being sutured and retained. Mother and child recovered well.

Case IV. was a primipara in whom the pelvic deformity and operation employed were identical with the preceding. The result was also good.

In Case V., in a multipara who had lost three children, the simple flat pelvis was the deformity present. Cœlio-hysterectomy was successfully performed, mother and child surviving.

In Case VI., a primipara was found to have a simple flat pelvis. The forceps had been applied, and efforts made at delivery before the patient entered the hospital. The contraction-ring was well marked, and cœlio-hysterectomy was performed in the interests of mother and child. After the child was extracted hemorrhage from the womb occurred; it was impossible to suture the uterus, although every means was employed to secure its contraction. Hysterectomy was performed, and, as it was feared that the uterus had become infected, the stump was left in the lower angle of the abdominal wound. The mother recovered, but the child did not survive.

Case VII. was that of a multipara with justo-minor pelvis, who had had repeated premature labors, followed by the death of the child; here cœlio-hysterectomy was performed with good results for mother and child.

Case VIII. was that of a primipara with an obliquely contracted pelvis. Cœlio-hysterectomy was performed, and some difficulty was experienced in stopping hemorrhage in the vessels of the right broad ligament; these were secured, and the stump closed and dropped. The patient's recovery was complicated by cystitis. Union by first intention occurred in the wound until the eighth day, when vomiting, abdominal distention, and sensitiveness to pressure developed. The lower angle of the wound reopened,

and a mass of necrotic material was discharged. The patient perished on the forty-eighth day after delivery. Post-mortem examination revealed diffuse purulent peritonitis as the immediate cause of death. The child survived.

In the ninth case enchondroma of the pelvis made natural birth impossible. The patient had lost a child with the use of forceps. Cœlio-hysterectomy was done, with a favorable result for mother and child.

The tenth case was one of inoperable carcinoma of the vagina. Here again the elastic ligature failed to control the vessels in one of the broad ligaments after the amputation of the uterus. The vessels were secured, however, and the stump closed by buried sutures. The patient made a good recovery from the operation, dying from cancer nine months afterward at her home. Her child survived.

[This array of cases in Wyder's clinic certainly helps to support his assertion that by modern surgical methods the mortality-rate for mothers is now equally low in craniotomy, symphysiotomy, and Cæsarean section; this being the case, craniotomy upon the living child is certainly not justifiable. —Ed.]

Gonorrhœal Endometritis Causing Premature Separation of the Placenta.—In the *Monatsheft für Geburtshülfe und Gynäkologie*, 1896, Band 4, Heft 3, Maslowsky, of St. Petersburg, reports the case of a patient in her first pregnancy, who suffered from pain and hemorrhage. Her history showed that about the fourth month of pregnancy she had a discharge of an irritating nature. Her husband had had gonorrhœa seven months before marriage. The day before the hemorrhage began the patient had a very light chill, which was scarcely noticed. On examination the pregnancy was found to be in the end of the ninth month, and no evidence of placenta prævia was present. An effort was made to stop the hemorrhage by putting the patient at rest, applying ice to the abdomen, and using Viburnum prunifolium and opium suppositories. The hemorrhage gradually ceased, and on the second day the use of ice was abandoned. The pain ceased entirely upon the fourth day after treatment began. The uterus emptied itself, however, shortly afterward, a living child being born. Involution proceeded imperfectly, but the mother made a good recovery. A bacteriological examination of the placenta and the secretion from the uterus was made, and pus-cells and gonococci were found. The child developed a conjunctival catarrh without the presence of gonococci. On examining the placenta an area was found in which separation had occurred prematurely. Microscopic examination of this portion of the placenta showed the basal decidua infiltrated with nucleated round-cells, and leucocytes and abundant extravasation. The bloodvessels were engorged; the chorion and amnion were without alteration. Gonorrhœal endometritis had been present, and had caused the premature separation of a portion of the placenta.

Organic Heart-disease during Pregnancy and Labor.—In the *Medical Chronicle*, October, 1896, Lea reports seven cases of heart-disease in pregnant women, with the history of labor. He calls attention to the tendency

to fatty degeneration and failure of the cardiac muscle which arises during the latter months of pregnancy, even when valvular disease is absent. If compensation is perfect before pregnancy begins, the prognosis for pregnancy and labor is good; if, however, the heart is failing, this failure will increase during pregnancy, gradually becoming worse as labor approaches. Abortion frequently occurs in these cases. Labor with these patients is very serious through engorgement and failure of the right side of the heart. A patient may even pass through labor only to fail rapidly several days afterward, probably as the result of degeneration in the heart-muscle. Mitral lesions are worst of all, because pregnancy favors the engorgement of the right heart which this condition causes. Lea reports seven cases, in four of which recovery occurred, while in three a fatal termination happened. The cases which recovered were comparatively young women in whom compensation was well established. In one, a multipara suffering from mitral regurgitation, the patient had suffered during a former labor from the effects of this complication. It was necessary to deliver the child with forceps. In the second pregnancy mitral insufficiency became prominent at five months. A second pregnancy followed two years later, and again at five months mitral insufficiency was well marked. There was also anasarca, with great breathlessness. A living child was delivered by forceps, mother and child making a good recovery. The patient recovered rapidly from her confinement.

The first fatal case was that of a primipara with a systolic mitral *bruit*. Labor was not especially difficult, the child being small, and having been dead several days. The patient's dyspnœa was so great that she could not lie down during the second stage of labor. Immediately after delivery the patient failed, and could not be resuscitated. Post-mortem examination showed the right heart much distended, and containing firm clot. The second fatal case had failing heart and albuminuria; it was that of a multipara who had suffered from chronic bronchitis. The urine was highly albuminous. Although labor was not especially difficult, the patient died on the eighth day after confinement, of heart-failure. The third fatal case was that of a multipara with greatly enlarged heart and dilated right ventricle; a large amount of albumin was found in the urine. The patient recovered sufficiently to leave the hospital three weeks after delivery, but died at her home three weeks later. Advanced mitral disease was present.

In reviewing the subject, attention is called to the fact that the induction of labor is rarely successful in these cases. The patient frequently comes into premature labor spontaneously, and is readily delivered. During labor extraction of the child should be made very gradually, and the second stage of labor should be as short as possible. Care should be taken to keep pressure upon the abdomen to prevent the rapid fall in intra-abdominal pressure when the uterus is emptied. During the third stage of labor free hemorrhage is beneficial, as tending to relieve the right side of the heart. When the heart fails at labor strychnine, digitalis, and nitrite of amyl are indicated.

GYNECOLOGY.

UNDER THE CHARGE OF
HENRY C. COE, M.D., M.R.C.S.,
OF NEW YORK.

Tuberculosis of the Ovaries.—WOLFF (*Archiv für Gynäkologie*, Band lii. Heft 2) concludes an elaborate article on this subject by denying the probability of primary infection of the ovaries, since the changes in the ovisacs are so slight as compared with the advanced degeneration in other organs. He believes that there is direct infection of the peritoneal covering of the ovaries, transmitted either through the tubes, or from the pelvic peritoneum. It is, of course, impossible to exclude as an etiological factor the entrance of bacilli, carried through the bloodvessels from distant organs, though this mode of infection must be exceptional. In all the writer's cases there was no doubt as to the fact of direct infection.

The question of the transmission of tuberculosis from the mother to the fœtus through the medium of the infected ovum is an interesting one. Although it must be admitted that the development of such an ovum is arrested, it is possible that the tubercle-bacilli from an infected Graafian follicle after the rupture of the ovum may, together with the latter, enter the uterus and infect it during development of the ovum.

Ovarian Tumors Complicating Pregnancy.—HOHL (*Archiv für Gynäkologie*, Band lii. Heft 2) in a paper on this subject summarizes as follows:

1. During pregnancy ovariotomy should be performed during the early months if possible. Artificial abortion may be induced in cases in which the tumor is intraligamentous, or is firmly adherent, so that an operation would be difficult; puncture is not to be considered.

2. During labor the tumor should be replaced, if possible, under anæsthesia; if this does not succeed, puncture may be resorted to, with subsequent vaginal incision if necessary. In the case of solid tumors, when the child is living, Cæsarean section is indicated, followed by ovariotomy, or the latter may be postponed until the puerperium. It is not justifiable to perform ovariotomy alone during labor.

3. If performed during the puerperium, the operation should be done not later than the second week.

Closure of the Abdominal Wound.—In discussing this subject before the International Congress at Geneva (*Annales de Gynécologie et d'Obstétrique*, No. 9, 1896) BANTOCK offered the following conclusions: 1. Suppuration of the abdominal wound is due not to the presence of bacteria, but to foreign bodies or strangulation by tight sutures. 2. In many cases simple through-and-through sutures are sufficient. 3. In stout patients it is better to close the peritoneum separately and the remaining layers of the wound with one or

two series of sutures. 4. Silkworm-gut is the best for interrupted sutures and catgut (*not* chromicized) for buried sutures.

LE TORRE thinks that it is not sufficient to unite the fascial edges alone. The edges of the muscle should also be included in the sutures.

HOWITZ believes that just as little of the peritoneum as possible should be included; in fact, he approves of the plan of some operators not to suture the peritoneal edges at all, but to allow them to unite toward the abdominal cavity. Patients should not be allowed to leave their beds until three weeks have elapsed.

CONDAMIN recommends a tier-suture in the form of corset-lacing, especially in large wounds.

(The speakers seemed to be evenly divided in their advocacy of tier- and through-and-through sutures.)

Vaginal Extirpation of the Uterus.—SCHRAMM (*Archiv für Gynäkologie*, Band lii. Heft 2) reports thirty-three cases of vaginal hysterectomy, with a mortality of 15.1 per cent. He prefers clamps to ligatures for the following reasons: 1. The operation is shorter and easier. 2. Less blood is lost and there is less risk of secondary hemorrhage. 3. In cases of carcinoma the resulting necrosis causes the destruction of the diseased tissue not removed at the time of operation. 4. Even in advanced cases the operation is free from danger. 5. The after-treatment is simpler and there are no ligatures to be removed subsequently.

Tuberculous Ovarian Cyst.—EHRENDORFER (*Wiener klin. Wochenschrift*, No. 15, 1896) reports a fatal case of ovariotomy in which at the autopsy tuberculous nodules were found in the pelvic peritoneum and the adnexa on the left side. None of the other organs were affected. The inner wall of the cyst (intraligamentous) was studded with tuberculous nodules, though the corresponding Fallopian tube was healthy. It was impossible to determine whether the disease developed primarily in the ovary or was transmitted through the tube.

Treatment of Retrodisplacement of the Uterus.—KUESTNER (*Ibid.*), after an exhaustive review of the statistics of various operators, using all the different methods of treatment, arrives at the following conclusions:

1. Although none of the operations for the cure of retroversion restore the uterus and adnexa to an absolutely normal position, the new relation of the pelvic organs is preferable to the former displacement.

2. A sharp distinction must be drawn between cases of movable and adherent retroversion. The adhesions must first be separated, after which the treatment in both cases is the same.

3. The abdominal cavity should not be opened for the purpose of separating adhesions unless these are too fine to permit detachment of the uterus by massage or Schultze's method.

4. Cœliotomy is preferable to anterior or posterior colpotomy, since adhesions may be more thoroughly and safely separated by the abdominal route, and, moreover, conservative operations on the adnexa can be carried out more satisfactorily.

5. The test of the value of any given method of fixing the uterus anteriorly is that it should keep the organ in a normal position, and that its functions should not be interfered with.

6. The results obtained by retro- and vagino-fixation and by Alexander's operation prove that the uterus may be maintained in a good position, but it has been shown that after vagino-fixation the functions of the organ are disturbed.

7. The latter operation should, therefore, not be performed in the case of women who are likely to conceive subsequently; in those who are not liable vagino-fixation has given excellent results, especially when supplemented by colporrhaphy.

8. When the adhesions are extensive the best operation is cœliotomy with ventro-fixation according to Olshausen's method. Conservatism should be practised as far as possible, especially in young subjects, in whom a portion of ovarian tissue should be left. If the tubes and ovaries are not seriously affected, it is sufficient merely to separate adhesions.

9. Alexander's operation is preferable in cases of movable retroversion, since it restores the uterus as nearly as possible to a normal position.

10. The indications for the operative treatment of retrodisplacement are furnished by the duration of the trouble, the negative results from the use of pessaries, and the aversion of the patient to palliative measures. A condition of the vagina which prevents the use of pessaries furnishes a positive indication.

11. Since prolapsus is generally the result of retroversion, the maintenance of the uterus in a normal position is the essential object to be aimed at. This is best attained by ventro-fixation, supplemented by plastic operations on the vagina.

Vaginal Extirpation of the Cancerous Uterus.—OLSHAUSEN (*Berliner klin. Wochenschrift*, No. 23, 1896), in an address before the German Congress of Surgery, reviews the history of the operation in Germany, showing the improvement in technique and results. He considers in turn the choice of cases, preparatory treatment, technique, and after-treatment.

With regard to the choice of cases, he lays down the rule that a radical operation should not be attempted when the presence of disease in the glands or parametric tissues can be demonstrated. He believes that too many patients are subjected to operation in whom the chances of cure are practically *nil*.

With regard to the decision as to suitable cases, the old rule that the uterus must be so movable that it can be drawn down to the vulva does not now apply; the natural resistance of the healthy tissue in young subjects may prevent this. Rectal palpation furnishes the most useful information, as in this way small nodules and affected glands can be detected, even in an early stage of the disease.

In Germany during 1887 and 1888 only 28 per cent. of cases of cancer of the uterus were regarded as suitable for a radical operation, while during 1895 and 1896 the number rose to 40 per cent. The difference is attributed to the greater intelligence of general practitioners and the earlier recognition of initial symptoms.

It was formerly the custom to prepare patients for operation by preliminary curettage and cauterization of the diseased tissue, but now this is done immediately before the operation. The vagina and vulva are then thoroughly disinfected, and fresh instruments are used subsequently. After curettage it will often be found that the bladder-wall is involved, when it is better to abandon the operation. Even after the peritoneal cavity has been opened and the uterine arteries tied it is still better to stop at this point, if it is found that the disease has extended beyond the uterus. The writer's technique presents no special points of difference from that ordinarily adopted. He uses ligatures, which are cut short. The adnexa are not removed except in cases of carcinoma of the corpus uteri. After ligating the broad ligaments and removing the uterus the stumps are fixed in the angles of the wound, and when all bleeding has stopped the peritoneum and vagina are sutured with catgut and a loose tampon of iodoform-gauze is left in the vagina.

The after-treatment consists in letting the patient alone as far as possible. The tampon is removed on the second day and the woman is not touched until the end of the third week. Clamps are utterly rejected because of the danger of infection.

The writer condemns the sacral and parasacral methods of operation, since they are necessary only in cases which he regards as unsuitable for extirpation.

In 139 vaginal hysterectomies performed by him since April, 1894, there were only three deaths, while in his last 100 cases there was only one death, due to pyæmia, from which the patient was suffering before the operation.

As regards permanent results, he calls attention to the fact that German statistics are steadily improving, so that it is now possible to assert that there is hardly an organ in the body in which operations for the cure of cancer can be performed with such confident expectation of a permanent good result as in the uterus.

HYGIENE AND PUBLIC HEALTH.

UNDER THE CHARGE OF

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AND

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Anticholera Inoculation.—Dr. E. Harold Brown (*Indian Medical Gazette*, July, 1896) has employed anticholera inoculation at Darbhanga with fair results. Cholera broke out in the jail, and in nine days there were nine cases. On the tenth day 172 prisoners were moved into camp twelve miles away, and 53 were left behind, and on the same day there were three new cases in the camp and another in the jail. On the following day two new cases occurred

in the camp, and arrangements were made to inoculate such as were willing to submit to the operation. All wanted it, but it was decided to inoculate but 86, and these were not picked men, all being stood in line and the alternate men chosen. Within half an hour after the operation there was pain, which steadily increased until it became very severe. Fever came on within three hours, 102.5° being about the average temperature. Before four o'clock in the afternoon every man who had been inoculated was in bed with fever. Six new cases occurred among those not inoculated, and on the following day two more from the same class, and all proved fatal. Two days afterward two cases occurred among the inoculated; both recovered. Another and last case occurred among the inoculated—a man, sixty years old, who had had diarrhœa for thirty hours before the inoculation. He died the day following. Thus, of 86 inoculated subjects three were seized and one died, and of 81 not inoculated eight were taken, and all succumbed.

Twenty-five of the prisoners left in the jail were inoculated on the day following the first operations in camp. One, an attendant in the observation-ward, was attacked and died the same day. Three days later a second case occurred which resulted fatally. In the meantime three inoculated persons were attacked and died. In all 111 were inoculated, and among them were five cases, three of which were fatal. 108 were not inoculated, and among these were eleven cases, all of which were fatal.

Sterilization of Public Water-supplies.—The utter worthlessness of all domestic filters, with the exception of the Pasteur-Chamberland and the Berkefeld, which differ only in the substitution of kieselguhr, an 'infusorial earth, for the kaolin of which Pasteur's was made, though more recently superseded by a special blend of the clays used for the finest kinds of porcelain, has been well known to bacteriologists ever since the exhaustive examination of nearly every pattern in the market by Plagge, of Berlin, and is now generally recognized by all competent judges of the subject. Sand, vegetable or animal charcoal, spongy iron, polarite, etc., will, by intercepting suspended solid patches, render turbid waters perfectly clear; and most of these materials are able to remove a greater or less proportion of dissolved organic and even inorganic substances; but one and all are incapable of arresting the passage of bacteria, and in practice are found actually to foster their growth; the organic matter retained in the filtering-material forming a hotbed for their cultivation, their numbers being frequently far greater in the filtered than in the unfiltered water.

The purification of water in the sand-filters used for public supplies is, as Proskauer has shown, effected, not by the sand—the action of which may be described as "multiple subsidence," the solid particles in suspension being attracted by and adhering to every face of each grain of sand so long as the movement of the water is almost imperceptible, though lifted and carried through if this be accelerated—but by the vital processes in the growth of the green, algoid film which forms on the surface of the sand, until by its density it ceases to permit the further passage of the water. It is this alone that removes dissolved matters and bacteria, reducing the number of these in the cubic centimetre from hundreds or even thousands to tens; so long as it is intact and the flow of the water does not exceed four inches (10 cms.)

per hour, the dissolved matters providing a pabulum for its growth. Pasteur's filters, on the other hand, while clean, have, like clean sand, no power of removing substances in solution, but they are absolutely impervious to even the smallest bacteria, and the filtrate is perfectly sterile. They are now everywhere adopted in bacteriological laboratories, and are, though slowly, making their way in private houses; but until recently the extreme tediousness of the process and the impossibility of securing equal impermeability in large filter-tubes have seemed to preclude the application of this method of filtration on a large scale. Messrs. Defries, the sole licensees for the United Kingdom, have, however, by an ingenious arrangement overcome the difficulty and have set up for the municipality of Darjeeling an installation capable of furnishing a supply of 150,000 gallons daily, the further increase of which will be simply a question of additional filters; and already the authorities at Peshawar and other Indian towns have ordered the same.

The "unit" of the system consists in a drum or vertical cylinder of soft cast-iron about three feet in diameter and eighteen inches in height, lined with an acid-resisting material and provided with a movable cover, held down by screwed and hinged clasps on a gutta-percha seating. Each cylinder is divided by a diaphragm into two compartments, the upper being about twice as deep as the lower and containing 150 of Pasteur's filter-tubes, held mouth downward by thick India-rubber collars in as many circular apertures in the diaphragm. The upper apartment has an inlet for the unfiltered water and an outlet or drain open only when the filters are being cleaned, while the lower has an outlet for the filtered water, and each has a small pipe with a stopcock; the lower for pumping in air for the purpose of testing the filters, and the upper for injecting the acidulated water used in cleaning.

The inlets and outlets are provided with gun-metal valves and communicate with three mains for the unfiltered water, the filtered and the waste or washings respectively, which are provided with sluices of the ordinary kind used in water-works and are distinguished by being painted in different colors. Pasteur's filters, from their peculiar nature, act efficiently under any degree of pressure, whether the water pass from within outward or *vice versa*. In these the unfiltered water is admitted into the upper compartments under a head at Darjiling of sixty-five feet or twenty-eight pounds (equals two atmospheres) to the square inch, passing through the filter-tubes into the lower, whence it flows into the mains; and the thirty-eight cells or cylinders of which this installation consists are capable of supplying 150,000 gallons of perfectly sterilized water, which might be increased indefinitely by merely adding to their number. As a single defective tube would destroy the efficiency of the filters, they are tested in the first instance, and subsequently at intervals by a method based on a remarkable property of the material of which they are composed, viz., that though they are freely permeable by water, they when wet resist the passage of air through their pores, even under a pressure of one and a half atmospheres. This is done by pumping air into the lower compartments, from which the water has been run off through the small pipe attached thereto, the valve of the inlet being closed to remove the pressure in the opposite direction, when, if the pressure-gauge remains stationary at the given pressure, the filters may be considered perfect; should the gauge, on the other hand, indicate, by sinking, the existence

of any escape, the covers are raised, when the defective tube is detected by the appearance of minute bubbles of air at the site of the flaw.

For cleaning the filter a 10 per cent. solution of hydrochloric acid is injected into the upper chamber under pressure, which forces it into and through the filter-tubes, dissolving the solids and earthy salts that had been arrested in their substance, the external coatings being afterward removed by a brush and then washed down the drain by a stream of unfiltered water.

Examination of Well-waters.—Dr. R. W. D. MacMartin Cameron, M. O. H. for Galloway, has called attention to the risk of unmerited condemnation incurred by prematurely analyzing the water of a newly constructed well.

Again and again has he found that the first samples showed percentages of ammonia and albuminoid ammonia, which it would have been impossible to pass, while two or three months later these had fallen to one-sixth or one-eighth of the former amount. He attributes this to the fouling of the well by the urine, expectoration, etc., of the men employed in its excavation. For example, 0.54 part of free and 0.22 of albuminoid ammonia per million were found in the water of a well sunk in an ideal position at the foot of a hillside, in a clean, dry pasture; but two months later the proportions were *nil* and 0.09 respectively. In none of the analyses made after the lapse of two months only was there any such enormous reduction in the chlorine; but Dr. Cameron maintains, as the result of numerous observations, that in such casual pollution of the soil around a well, the chlorides are the last of the urinary products to enter the well and the last to disappear after the contamination has ceased.

It is the practice or fashion now to disparage shallow wells, as being *de facto* and inevitably liable to pollution; but we know enough of the distribution and functions of the nitrifying bacteria in the upper layers of the soil to see that if by a proper kerb, cover, etc., storm-waters and surface-filth are excluded, all legitimate additions of manure and other organic matters to the surrounding surface-soil will be completely mineralized long before they can reach the ground-water. It would be impossible, if it were desirable, to abolish shallow wells; but there is no excuse for the retention of that abomination, the cesspit, which by discharging, through leakage or otherwise, putrid liquids into the earth at a depth below the bacterial or "living" zone, is the cause of the pollution not only of most shallow, but of many deep wells, since no amount of percolation through the "dead" earth suffices for real purification. The "living" earth is the best of all possible filters, and with the abolition of cesspits, the direct application of excreta to the soil, and the discontinuance of the practice of accumulating dung in heaps till the adjacent and underlying soil is supersaturated with reeking filth, a properly constructed well, even of but six or eight feet in depth, should be practically free from the least risk.

Wells are indeed the natural sources of water for human use, and it is only human perversity that has marred their fair fame.

Post-scarlatinal Diphtheria.—The present state of bacteriological science forbidding us to assume either the spontaneous origin of a case of specific

infectious disease or the transformation of one specific disease into another, the medical officers of the Metropolitan Asylum Board's (Fever) Hospital have been much concerned with the problem of post-scarlatinal diphtheria; that is, of unmistakable diphtheria appearing in a patient convalescing from scarlatina, and in many instances at a period which would suggest or necessitate the occurrence of the infection within the hospital itself, a suspicion that apparently derives support from the great increase in the number of these cases that followed the admission of cases of primary diphtheria into the hospitals of the Board.

Year.	No. of cases of scarlatina.	No. of cases of post-scarlatinal diphtheria.	Incidence, per cent.	No. of diphtheria cases admitted.
1886	1,559	7	0.4	.....
1887	4,342	18	0.4	.....
1888	5,717	67	1.1	99
1889	3,730	102	2.7	722
1890	6,439	158	2.4	942
1891	5,442	97	1.7	1312
1892	11,333	211	1.8	2009
1893	14,832	207	1.3	2848
1894	12,636	210	1.6	3666

But this explanation will not bear examination; there had been such cases in the hospitals before the admission of diphtheria, and the opening of these institutions was in consequence of the enormously increased prevalence of diphtheria in the metropolis.

Notification did not come into force until 1890, but the deaths from diphtheria registered in London having risen from 0.09 per 1000 of population in 1877 to 0.23 in 1887, rose suddenly in 1888 to 0.30, and the attack-rate among scarlatinal children in hospitals since 1890 has in fact been not much higher than that among previously healthy children outside. Besides, in the N. E. Hospital, to which no cases of diphtheria are admitted, the wards being devoted to scarlatina exclusively, the incidence of post-scarlatinal diphtheria exhibited an identical and simultaneous rise for the years 1893, 1894, and 1895 (the hospital having been opened in 1892 only) of 0.4, 0.8, and 1.6 per cent. The increase in the number of cases of scarlatina admitted in the hospitals is no doubt due not so much to the fact of the greater prevalence of the disease in London, as to the legal removal of the stigma of pauperism formerly attaching to these institutions, with the civil disabilities it involved, which deterred respectable workingmen and tradesmen from availing themselves of them, of a growing appreciation of the advantages of hospital treatment and of the removal of first cases among the public generally, and to the passing of the Notification Act, which has led to the recognition of cases which might have escaped or evaded observation. Dr. Goodall, of the Eastern Hospital, one of our highest authorities on diphtheria, primary and secondary, is convinced that these post-scarlatinal cases differ in their nature and origin in no way from primary cases, but can invariably be referred to the presence of the Löffler bacillus in the throats of the individual patients or of other members of the family, and in some few instances of the nurses in attendance; these pre-existing cases having the

appearance of ordinary sore-throats, and in the absence of bacteriological examinations not being recognized as diphtheritic; indeed, we know from actual observations that the bacilli are often present without giving rise to any symptoms whatever. The figures for his own hospital for the five years 1891–1895 are as follows:

Year.	No. of cases of scarlatina.	No. of cases of diphtheria (mostly post-scarlatinal).	Deaths from diphtheria.	Percentage incidence of diphtheria.	Case-mortality of the diphtheria cases.
1891 . .	1413	28	18	1.9	64.2
1892 . .	2902	17	9	0.5	52.9
1893 . .	2018	10	6	0.4	60.0
1894 . .	1647	14	6	0.8	42.3
1895 . .	1517	68	17	4.4	25.0

Of the 17 deaths in 1895 no fewer than 9 were due not so much to the secondary diphtheria as to some complication of the antecedent scarlatina, and would probably have ended fatally, though diphtheria had not supervened; but even including these the death-rate of 25 per cent. is less than half the mean of the preceding four years, which was 55 per cent., and this he rightly ascribes to the employment of the antitoxin treatment, which he was the first to adopt in the hospitals of the Board.

We may here refer to the observations of Dr. Caiger, another of the Board's superintendent medical officers, on the relative danger of fevers supervening on others, viz., that the mortality of such secondary attacks is far greater when the preceding disease has been one attacking the same mucous membranes or other tissues; thus varicella, usually a trifling affection, assumes, when following scarlatina or measles, the characters of smallpox, and, though post-scarlatinal is graver than primary diphtheria, an attack of diphtheria following measles is most likely to be fatal, since it finds not only the throat, but the bronchi themselves in a highly congested and susceptible condition, and is apt to involve by extension the entire respiratory tract.

The Differentiation of the Bacillus of Enteric Fever (Eberth's) from the B. Coli Communis, etc., and of Koch's Cholera-bacillus from Others of Like Morphological Character.—Dr. Klein, in his Harben lectures, delivered this summer at King's College, London, expressed his belief that, on the one hand, in the majority of cases in which the presence of the typhoid bacillus had been alleged, the organism actually observed had been merely the B. coli; and, on the other, that little reliance could be placed on its assumed absence, since even when its presence was certain, from the proved admixture of enteric evacuations, it might easily elude detection.

The B. coli is, strictly speaking, positive evidence of fecal contamination direct or indirect, being always derived originally from the intestine of man or beast, but not of such pollution in the grosser sense that is commonly suggested by the expression. In towns and populous districts it is ubiquitous, being present in earth, air, and water, in food and drink, and even in the saliva and sweat. But it is not found on mountains and moors, and so far from its ubiquity elsewhere negativing the theory of its origin, it simply

means that the air and water are nowhere absolutely free from some slight taint.

It is the chief cause of the souring and curdling of milk, which, though sterile so long as it is in the udder, becomes inoculated in the act of milking; while milk, being the richest of culture-media, that sold in the shops teems with the bacilli by myraids in the cubic centimetre.

It was, Dr. Klein said, absolutely distinguishable from Eberth's bacillus by:

1. Its power of coagulating milk, this being due to the formation of special ferment, and not to the acid which is generated equally by Eberth's bacillus, as shown by the cultivation of either in gelatin tinted with blue litmus.

2. The evolution of gas, forming large bubbles in a solid gelatin-culture.

3. By the production of indol in broth-cultures kept at a temperature of 37° C., indicated by the deep red color following the addition of a few drops of *commercial* nitric acid, this being in fact the source of the indol which is a normal constituent of the contents of the intestine. None of these properties is possessed by Eberth's bacillus, which is more slender, growing far less rapidly, and, under special staining-methods, showing numerous flagelli, the B. coli having few or none. The bubbles beautifully seen in stab-cultures are by themselves conclusive.

The detection of the bacillus of typhoid fever is extremely difficult; even in the undiluted sewage of a wing of a hospital in which were forty typhoid patients it was demonstrable in a minority only of the preparations; and though the epidemic of Worthing was indisputably due to a contaminated water-supply, none was found in 2500 c.cm. taken from the mains and only a few in 1200 c.cm. from the well itself; and the results were little better when he inoculated with pure cultures of the typhoid bacillus cultures and fluids containing B. coli, etc.

The examination of sewage-organisms may be greatly facilitated by making cultures in gelatin with 300 to 400 per cent. of phenol, which eliminates all but the B. coli, Eberth's, Proteus Zankeri, and perhaps one or two more; but under all circumstances the B. coli, originally the more numerous, multiplies with such rapidity as to crowd out wholly the more delicate organisms of typhoid. Yet the presence of a large number of the former shows such fecal pollution as to render specific contamination possible at any moment, and in this lies their chief significance.

A like difficulty, or rather danger, attends the differentiation of Koch's bacillus of cholera from Finkler's, which is present in the diarrhœas often miscalled cholera nostras, etc., if the examination be conducted in a perfunctory manner.

The most characteristic appearance of Koch's bacilli is that of chains of commas or pairs, giving the form of an S, in the flocculi of the rice-water evacuations. From these flocculi cultures are made in water with 1 per cent. of pepsin and 0.5 per cent. of common salt. Subcultures made by a stab in gelatin are easily recognized by the more rapid liquefaction of the gelatin by Finkler's, which gives a jelly-bag appearance to the track, that following a stab of Koch's presenting the appearance of a string of beads.

This distinction, depending on the different rates of growth, is analogous to that observed in the case of the B. coli and Eberth's, though the effect is in the one instance evolution of gas and in the other liquefaction of the

gelatin. To detect cholera-bacilli in water, 500 c.cm. should be mixed with a 10 per cent. solution of pepsin and 5 per cent. of salt, in such proportions that the mixture contains 1 per cent. of pepsin and 0.5 per cent. of salt.

Fluid cultures treated with a few drops of sulphuric acid absolutely free from nitrates give an indol reaction—*i. e.*, a deep red color.

Mortality from Tuberculosis in German Cities.—Dr. Bollinger (Dr. C. W. Chancellor, in *Sanitarian*, April, 1896), comparing the mortality-tables of various German cities extending over long periods, finds that in the large cities a distinct diminution in the death-rate from tuberculosis is taking place. In Munich, for example, a diminution of 18 per 10,000 has occurred during the last twenty-six years. The tuberculous material in the Pathological Institute, it is said, has diminished so that in the space of five years 8 per cent. fewer cases of tubercle are met with on the post-mortem table; formerly a third of all post-mortem examinations were on subjects that had died from tuberculosis in some form, where they now number only a fourth. He states also that in 1893–'94 a remarkable increase in tuberculosis took place in Schwerin, and this increase corresponded with a dearth of fodder, illustrating the effects of deficient nutrition in predisposing to disease.

Milk as an Aid in the Conveyance of Disease.—Dr. R. G. Freeman (*Medical Record*, March 28, 1896) has collected and tabulated fifty-three epidemics of typhoid fever attributed to milk, twenty-six of scarlatina, eleven of diphtheria, two of foot-and-mouth disease, three of throat affection, two of acute poisoning, and one of cholera asiatica, all occurring since 1880, and including none of those tabulated by Hart in 1881. As an aid in the consideration of the manner in which milk may become infected, Dr. Freeman prepared three plates of equal size (three and a half inches in diameter) and exposed them for the same length of time (two minutes), one in the open air, one inside a barn, and the third under a cow being milked in the same barn, the plate being held just in front of the milk-pail. Six colonies developed on the first, 111 on the second, and 1800 on the third. Such a number of bacteria falling on so small a surface in so short a time indicates that an enormous number may fall into a milk-pail during the time required for a complete milking. These bacteria fall from the belly of the cow, from the clothes of the milker, and from his hands as well. Contamination may be by impure water used in washing the utensils or in cooling the milk, or, again, as an adulterant. Whatever bacteria are present in milk after the first handling have ample opportunity to multiply before the milk is consumed, since milk is usually over thirty-six hours old when it is delivered to the purchaser. Ordinary New York milk often contains from a hundred to several millions of bacteria in each drop. Dr. Freeman divides the diseases which it is believed may be conveyed by milk into three classes: 1. Those in which the pathogenic micro-organisms which are introduced into the milk are conveyed from the body of the cow, as tuberculosis, anthrax, foot-and-mouth disease, and acute enteritis. 2. Those in which the pathogenic micro-organisms are introduced from some other source during or after milking, as cholera, typhoid, scarlet fever, and diphtheria. 3. Those caused by milk containing poisonous agents developed by bacterial growth. The

disease-germs emanating from the cow may be within the udder, or the contamination may occur during milking by the dropping of particles of fecal matter from the cow, or they may come from the dust of the barn containing dried particles of fecal matter or saliva of the cow. Epidemics due to milk have certain characteristics. The cases appear suddenly, many new cases each day, and the subsidence is equally marked a few days after stopping the harmful milk-supply. The houses invaded are often widely distributed and not restricted to some particular part of the town. The houses of the rich are apt to be more seriously invaded than those of the poor, because the poor, as a rule, use little milk. The houses invaded often have the best hygienic surroundings. The special milk-drinkers in each family are most liable to become affected. In more than half of the epidemics cases of the diseases have occurred among the handlers of the milk prior to the outbreak. A study of the reported epidemics teaches that in cases of communicable infectious diseases inquiry should be made into the source of the milk-supply; milk-traffic should be separated from houses where people live; the dairy should be at least 100 feet away from the house, barn, or privy, and on a higher level, and should have a pure water-supply of its own; nobody should be allowed to enter the barn or dairy or handle the milk who has come in contact with a sick person, the sickness not being positively known to be non-contagious; all persons connected with the milk-traffic should be required to notify the authorities on the outbreak of any disease in their respective abodes, and to abstain from their work until permission to resume is given by the authorities notified; cities should accept milk only from daries regularly inspected, and where all the cows have been proved by the tuberculin-test to be free from tuberculosis; all tuberculous cows should be killed, and the premises where they have been kept should be thoroughly disinfected; milk should not be kept for sale or stored in any room used for sleeping or domestic purposes or opening into the same.

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